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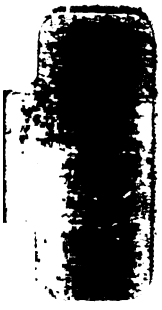

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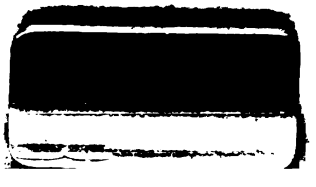

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TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

FOR THE YEAR 1901.

PART I.

BOSTON:
PRINTED FOR THE SOCIETY.
1902.

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The following lectures have been circulated to some extent in the form of slips reprinted from the reports made by the Secretary of the Society in the "Boston Evening Transcript." As here presented, the lectures are, as far as possible, printed in full, and reports of the discussions following the lectures are added, these, where it appeared necessary, having been carefully revised by the speakers.

The Committee on Lectures and Publication take this opportunity to repeat what they have before stated, that the Society is not to be held responsible for the certainty of the statements, the correctness of the opinions, or the accuracy of the nomenclature, in the lectures and discussions now or heretofore published, all of which must rest on the credit or judgment of the respective writers or speakers, the Society undertaking only to present these papers and discussions, or the substance of them, correctly.

AARON LOW,
J. H. BOWDITCH,
E. W. WOOD,
Committee on Lectures and Publication.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, January 5, 1901.

A duly notified stated meeting of the Society was holden today at eleven o'clock.

In the absence of President FRANCIS H. APPLETON, by reason of illness, the chair was taken by Vice-President BENJAMIN P. WARE, who introduced the President-elect in the following remarks:—

In the absence of the President it becomes my duty to call this meeting to order. In entering into a new year and a new century we are reminded of the important work that this Society has accomplished since its organization, nearly seventy-two years ago. Beginning in a small way, by persistent effort in advancing the science and art of horticulture and agriculture, we have made great improvement in the varieties and quality of flowers, fruits, and vegetables, and have taken a position second to no other Horticultural Society in this country. We commence the century under hopeful auspices for continued success with a new President who comes to us with a lifelong successful experience as a horticulturist and farmer; also as President of the Worcester County Horticultural Society. It is with pleasure that I introduce to you my friend, your President-elect, O. B. Hadwen.

President Hadwen then delivered his inaugural address, as follows:

Address of President Hadwen.

Ladies and Gentlemen,

Members of the Massachusetts Horticultural Society:

May I extend to you all a happy greeting for the New Year, and express the wish that the usefulness of the Society may in the New Century not only equal but surpass that of the century now closing.

The result of your annual election calls me to a duty to which I had never aspired, and which I have never sought or expected. I do not regard my election as a compliment to myself, but rather as an expression of the wish of the members that the Society may continue under wholesome by-laws, which for many years have contributed to govern the Society, and to secure the confidence of its members in the progressive work which it was incorporated to carry forward, and we may be encouraged with the feeling that it may continue as in the many past years to promote the best interest pertaining to horticultural pursuits, and to advance the science and practice of horticulture within its jurisdiction.

I recall with very great significance the work that has been accomplished within the last fifty years in all departments of horticulture, and while our fields may not be as broad as at the start, it is a satisfaction to believe there is no end to horticultural advancement, as there is no end to nature's progress.

I come to discharge my official duties to the Society with but little experience in its administration, and with but little acquaintance with the varied and complicated questions which must necessarily arise during this year in changing from our old and venerated hall to the new one now in course of construction, and while the change is inevitable I can see no way but for each and every member of the Society to work in harmony and make the best of our situation, hoping that our efforts will be crowned with success, and remembering the noble men and great benefactors that have preceded us.

And should we not ascribe much of the achievements and prosperity of this Society, and the advances made towards the object for which it was incorporated, to the energy and zeal of the men and women who have proved their devotion to it for many years by their exhibitions of Fruits and Flowers and Vegetables?

Let me most sincerely thank you for the honor you have conferred upon me by asking me to preside over the deliberations of this Society the present year, following such a corps of noble men and women who have devoted their time and means to the development of horticulture, as a science and art since its incorporation.

Since that time an almost entire revolution has taken place in the principles and practice which has been brought out every year.

When the little colony of men who were the founders of the Massachusetts Horticultural Society held their first meeting on Feb. 24, 1829, they could but imperfectly realize the progress the Society would make in the seventy-two years of the nineteenth century, starting at a period when knowledge of the science and art of horticulture had barely dawned.

But they gave their energies to the progress of horticulture, and nearly three-quarters of the nineteenth century has marked an epoch in the science of horticulture, not only in this Commonwealth but over the whole country. An industry, vast in its extent, and accompanied by an intelligent knowledge previously not possessed in the growing of fruits, flowers, and vegetables that supply the demands and wants of an educated and discriminating people, has been built up.

It is seventy-two years since the first meeting of the Society, held on February 24, 1829.

On the 28th of April the Society voted to petition the legislature for an act of incorporation, which was granted, and approved June 12, 1829, by Levi Lincoln, Governor, authorizing the Society, to purchase and hold real estate to the amount of ten thousand dollars, and personal estate to the amount of twenty thousand dollars, which has been increased from time to time by legislative enactment to a million dollars.

The Society occupied and held its exhibitions in a number of halls, until, in 1845, it built its first Horticultural Hall on School Street, which, as time rolled on and horticultural progress increased, became crowded to such an extent that larger quarters were found imperative, and in 1865 this hall in which we are now assembled was finished and dedicated to the future use of the

Society. It is here in this temple dedicated to horticulture that for a period of thirty-six years the Society has achieved its greatest success, unequalled, both in the practice and the science of horticulture, in any corresponding period in the country's history. The ten gentlemen constituting the building committee have all gone to their reward, save one—for many years a most notable, public-spirited benefactor to horticultural and arboreal progress.

The most prominent event of the past year is the vote which authorized the sale of this hall and the removal to the new building now being erected by the Society and expected to be in readiness for occupancy on May 1st. Many will leave this hall with feelings of deep regret, for it is here very many interesting exhibitions and meetings have taken place, where very many new fruits, flowers, and vegetables have been introduced, for the first time, to the public, and their merits have received approval, and where our associations have continued instructive and pleasant.

Heretofore, each removal of the Society has added renewed lustre to the growth of horticulture in its earlier progress. When in the new building, may we hope to show by practical demonstration that the best horticulture of the world is none too good for us, and may we keep abreast of the times with the best work pertaining to our interests. When removed to the new building let us profit by the example of the men of noble deed who have preceded us, and let the progress of the future be in a corresponding ratio with the past. It must be our study to know what course to pursue to best promote its influence. There must be united and harmonious action among us or we cannot maintain the standing which we have so long enjoyed and which has built this Society up to its present position—one of the best on this continent—and though its members by their noble deeds have continued its progress from the beginning by devoted industry, and by courageous and persistent efforts and by liberal bequests have brought the state and country from comparative ignorance to enjoy the higher arts of horticulture.

I cannot speak fittingly of all the changes or advances made by the influences of the Society, and the intelligent energy which many cultivators have devoted to the introduction of new fruits both native and foreign. There was a period when the exhibition

tables were covered with hundreds of sorts of pears, which ultimately proved a costly experience to the enthusiasm of some growers, but a valuable object lesson to the society and to those growing pears for the profit. We have had the same experience with the apples, the peaches, the plums, the grapes, as well as the smaller fruits.

But now the prize lists, revised yearly, contain all found worthy of encouragement or cultivation, and adapted to the climate. Truly as much interest has been manifested in the introduction and cultivation of flowering plants; all that promise well receive a trial, and our plant houses and grounds contain the best to be found the world over. Many new plants from seed are shown every season which often receive the Society's gold and silver medals.

And the improvement in vegetables perhaps has enlisted as growing interest as either fruits or flowers. Very many new and approved sorts are yearly exhibited, each seemingly an improvement of its respective kind, and the question may fairly arise, is the end ever to be reached as long as nature can be assisted with the intelligence of man, and the great forces of nature become better understood? It would seem that a natural law exists whereby each kind of fruit or flower is endowed with a natural period of life, prolonged by care and cultivation, or shortened by the want of it.

Horticulture as a vocation and business is improving our lands to a wonderful extent, increasing the crops grown upon them; it is beautifying homes and landscapes; it embellishes homes with beautiful trees and flowers which are always a delight, not only to the family but to the passer-by. A beautiful home refines its inmates, gives better rational life and more of it, and is the very cornerstone that higher life and civilization rests upon.

Arboriculture or Forestry is also one of the branches in which we are interested. The finer deciduous and coniferous trees, both indigenous and exotic, are constantly being introduced and planted for the embellishment of homes and estates.

The requisite knowledge we have obtained of tree planting is giving great advantage in selection of kinds best adapted to the soil and climate, and while forest planting has not enlisted much attention in this Commonwealth, either by individuals or by cor-

porations, still it would seem that state and towns should issue bonds for the purchase of abandoned or cheap lands unsuitable for other husbandry, when forest industry could change thousands of acres situated in this Commonwealth from waste to productive forests—lands with a profit accruing to the state, contributing both a better climate and a lumber supply which is growing scarcer and dearer as time goes on.

Now ladies and gentlemen, members of the Society, I have time to speak of but few of the interests pertaining to the Society, but with the large membership, with the large wealth, with the early prospect of a new building, with enlarged accommodations for the library, commodious halls for exhibitions and lectures, with all the modern conveniences which ingenuity can devise, very much will be expected. Need I say that the most important steps to be taken are those that will promote peace and harmony? These are fundamental to our future usefulness; there must be united and harmonious action for our progress, or we make the retrograde movement so disastrous to our prosperity and welfare.

Let us begin the new century and the new year with the firm resolve that the spirit of union and concord shall ever remain the prominent light to which our course shall ever be directed.

It will require a full allowance of aptitude and common sense to meet fairly the exigency of removal, in adapting ourselves to the new building; undoubtedly there may be some conditions other than have been expected.

It will be a year of new experiences requiring considerable adaptability in the management of all departments to work smoothly and without friction. May we hope that each department will, as far as possible, correctly outline the course of procedure to ensure success.

But whatever may be our action let the love of our Society preponderate and be carried forward with that perseverance and zeal which actuated the earlier members who preceded us, and builded it to its present standing among the Horticultural Societies of the world.

I have thus endeavored, ladies and gentlemen, briefly to speak to you in my plain way, let me hope not entirely inconsistent with the time and spirit of the occasion; and for the honor of your presence I thank you.

Benjamin P. Ware, Chairman of the Committee appointed on the first of December to prepare a memorial of William Saunders, presented the following:

William Saunders, of Washington, D. C., since January 9, 1875, a Corresponding Member of this Society, passed on to his spiritual life on the 11th of September last. He was born at St. Andrews, Fifeshire, Scotland, December 7, 1822. His career has been most remarkable as a leader and organizer in his chosen calling of gardening. For three generations his ancestors had been distinguished gardeners in Scotland. He began as an apprentice, at sixteen years of age, under the instructions of the most noted horticulturists there. In 1845 he came to New York, and was first employed by Johns Hopkins, the founder of the University bearing his name, in laying out his estate of four hundred acres, called Clifton Park.

In 1854 he united with Thomas Meehan, at Germantown, Penn., as landscape artist and garden architect, and he designed Hunting and Fairmount Parks in Philadelphia. At this time Mr. Saunders was one of the principal writers on horticultural subjects, as many of us well remember. In 1862, when the Department of Agriculture was established, his ability was recognized, and he was appointed Horticulturist and Superintendent of Gardens and Grounds, which position he held to the time of his death, and it is admitted that the Department has not nearly exhausted the valuable suggestions which he made years before it began the work of park embellishment.

As President of the Park Commissioners of Washington he gave of his rich knowledge and experience the designs for planting that have been continued from year to year under his personal care, until the grounds about the capitol have the grandeur of a natural forest and yet show the skill of an artist in the selection and arrangement of tree planting that commands the admiration of the thousands of yearly visitors.

Mr. Saunders designed the beautiful cemeteries at Amboy and Rahway, N. J., Bethlehem, Penn., Chicago and Springfield, Ill., and also the magnificent National Soldiers' Cemetery at Gettysburgh. He was selected by Gen. Grant to design the Park surrounding the Lincoln monument at Springfield, Ill. Through his

influence thousands of plants have been introduced into this country for experimental purposes, and probably the most important and valuable fruit ever brought from any other country was the Navel or Seedless orange, which he imported from Brazil in 1870, and by propagating liberally was enabled in 1873 to give a few plants to a settler in Southern California. The original imported tree is now in the greenhouse of the Department. Today there are thousands of acres devoted to the culture of this, the best orange for the markets all over this country.

William Saunders was the first man who suggested to the farmers of the United States the value and importance of organizing for their mutual advancement, educationally, socially, and financially; hence came the organization of the Patrons of Husbandry. He was elected the first Master of the National Grange; he wrote the preamble of its constitution, which has never been altered, and by it thousands of farmers' families have been benefitted as in no other way possible.

In consideration of this memorial

Resolved, That the Massachusetts Horticultural Society fully appreciates the great value of the life work of William Saunders to the horticultural and agricultural interests of the whole country. And especially do we mourn his loss to this Society as a beloved and highly esteemed member.

Resolved, That this memorial be printed in our TRANSACTIONS, and that a copy be sent to his bereaved family.

BENJAMIN P. WARE,
AARON LOW,
J. WOODWARD MANNING,
Committee.

The memorial was unanimously adopted.

Augustus P. Loring, Esq., from the Committee on the Revision of the Constitution and By-Laws, presented the report of that Committee in print, and explained the new By-Laws proposed. It was moved and seconded that the report be accepted and this motion was carried.

It was moved and seconded that when the vote on the adoption of the proposed code of By-Laws is taken, it be taken by ballot, with the use of the check list, and this motion was carried.

It was voted to take up the report of the Committee section by section, beginning with the "Preliminary" portion.

A motion that speakers be limited to five minutes each was defeated.

A motion that the subject be indefinitely postponed was defeated by a vote of 31 in favor to 59 against.

A motion that it be postponed until the first Saturday in October was carried by a vote of 43 in favor to 40 against.

The appropriations recommended by the Executive Committee at the meetings of the Society on the 3d of November and the 1st of December, 1900, came up today for final action, as follows:—

For Prizes and Gratuities for the year 1901,

For Plants	$2,000.00
" Flowers	2,500.00
" Fruits	1,700.00
" Vegetables	1,200.00
" Gardens	500.00
" Native Plants	175.00
Total	$8,075.00

For the Committee on School Gardens and Children's Herbariums, for Prizes	$125.00
For the same Committee for Incidental Expenses .	75.00

At the meeting of the Executive Committee on the 29th of December it was voted to recommend to the Society to make the following appropriations:

For the Library Committee, this sum to include the income of the French and Farlow Funds .	$700.00
For the Committee of Arrangements, this sum to include all extraordinary expenses of said Committee	300.00
For the Committee on Forestry and Roadside Improvement	150.00

For the salaries of the Treasurer and Superintendent of the Building, and the Secretary and Librarian $3,000.00

For the Committee on Lectures and Publication, this sum to include the income of $50 from the John Lewis Russell Fund 250.00

(The last appropriation was recommended by the Executive Committee on the 29th of November.)

The report was accepted and the appropriations were voted.

The President also reported the appointment by the Executive Committee of Charles E. Richardson as Treasurer and Superintendent of the Building, and Robert Manning as Secretary and Librarian for the year 1901.

On motion of William J. Stewart it was voted that the thanks of the Society be presented to Messrs. Kelway & Son of Langport, England, for their generous gift of medals as prizes for pæonies during the present and the last three years.

Letters were read from Ex-President Francis H. Appleton, and Arthur F. Estabrook, each presenting, for use in the new building, one of a pair of large and elegant vases loaned for the last chrysanthemum show by the Jones, McDuffie & Stratton Company. The thanks of the Society were unanimously voted to the givers for these adornments of our exhibition halls.

The Secretary read a letter from Charles S. Sargent to Ex-President Appleton conveying the offer by Mrs. J. Montgomery Sears of the sum of $350 to be used for a first and second prize for Seedling Carnations. The thanks of the Society were unanimously voted for this liberal gift.

A letter from William A. Taylor, Secretary of the American Pomological Society, in relation to the biennial session of that Society the present year, was read and referred to the Executive Committee.

The Annual Report of the Committee on Lectures and Publication and the Annual Report of the Secretary and Librarian were presented and referred to the Committee on Publication.

Adjourned to Saturday, February 2.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 12, 1901.

A Meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

EVERGREENS FOR WINTER EFFECT.

By J. WOODWARD MANNING, Reading.

In considering a list of hardy evergreen trees and shrubs, useful for winter landscape effect, the intention is to include besides conifers those classes of broader-leaved evergreens of tree, shrub, and vine habit which are as yet seldom associated with conifers for this purpose. These include such kinds as Hollies, Rhododendrons, Azaleas, Laurels, Ivies, etc., some of which combine with their evergreen foliage a wealth of flower effect as well, rendering them useful in landscapes at all times of the year, and the intention is to bring together here a rather complete list of these plants and show how it is thus possible to extend their use and produce beautiful foliage effects throughout the winter months.

First considering the larger growing conifers, we have besides the White Pine (*Pinus Strobus*), so well known to us as our most valuable as well as most ornamental native, a selection of foreign Pines which have much of the same general effect of growth and similar foliage as *P. Strobus*, among which are the Japanese species, *P. Thunbergii*, varying in effect from the last in a somewhat more open habit and darker foliage; *P. parviflora*, of dwarfer habit, with shorter foliage in smaller tufts, and with bark of a greyish tone of color; *P. densiflora*, another Japanese species with soft dark green foliage and flaky reddish bark; the Himalayan species, *P. excelsa*, the most beautiful of the class, with densely clothed branches of a distinct pendulous habit and very long, somewhat drooping, pale glaucous green leaves in large showy tufts; the American *P. Lambertiana*, similar to the White Pine but with more densely clothed branches and a more

strictly conical habit; *P. Cembra*, from the Alps of Europe, with rich green, densely tufted foliage and a very close, rounded, ovate habit; and *P. Bungeana*, a North China species of rounded habit of growth and thinly branched with densely tufted foliage and remarkably light colored bark, milky white in effect. All of these are hardy and useful for variety.

Taking another type represented by *P. resinosa*, our native Norway or Red Pine, we have a similar though distinct effect of heavy growth and long, dark green, densely-tufted foliage in the Austrian Pine (*P. Laricio* var. *Austriaca*) and its typical form known as the Corsican Pine (*P. Laricio*), the Japanese *P. Koraiensis*, a species of smaller growth, and the West American *P. ponderosa*, which, while a most important tree in the central and far western states, does not succeed as satisfactorily in our vicinity. It is a dense growing tree with dense tufts of long, dark green foliage. All the species mentioned under this type are of comparatively rapid growth and in their younger stages, when the lower branches are retained, form most useful specimen lawn trees.

We are prone to neglect our native Pitch Pine (*P. rigida*) which, while somewhat difficult to transplant, when once well established forms a tree capable of withstanding our most exposed seashore and inland conditions and will adapt itself to poor soils. It is, too, more apt to take on picturesque forms than any other native, often giving that peculiar, irregularly round-topped, bare-trunked effect that is so commonly associated with Italian views in which the European Rock Pine (*P. Pinea*) forms a more or less salient point. Other species of larger-growing Pines adapted to our climate and similar in effect to the Pitch Pine are the *P. contorta* of the West, the *P. tydæa* of southern New England, and *P. pungens* or the Table Mountain Pine of the mountains of North Carolina. The Scotch Pine (*P. sylvestris*) is a well known and highly useful form for dry, sterile soils, but is not as long-lived or as generally satisfactory as some other species, though very generally used in landscape planting.

In Pines of dwarfer stature than those mentioned, the Mountain Pine (*P. montana* or *Mughus*) figures as a useful lawn tree of rounded, compact habit of growth, very useful for planting in

Picea alba var. cœrulea.

sterile soils under all conditions of exposure. To attain further dwarfed effects in Pine growth we have recourse to the dwarf forms of *P. Strobus*, *P. sylvestris*, and *P. Massoniana*, the latter also producing two remarkable golden leaved varieties known as the Golden and the Sun Ray Japanese Pines.

Of Spruces, a plea should be entered here for our native species as in many respects best adapted for general New England conditions, and yet these have been largely overlooked, and the foreign varieties planted where the natives would have done better. The Red Spruce is an instance to the point, in which we have a moderately quick growing tree with light green foliage, reddish stems, and a ruggedness of character that ensures its successful use in seashore and other exposed situations, and our White Spruce, (*Picea alba*) is in many respects our most ornamental evergreen, combining, as it does, absolute hardihood with elegant form and a tendency to retain its lower branches better than any other evergreen, while it shows wide variation in the color of its foliage, in some instances its glaucous types proving rivals to the best form of *P. pungens* (the Rocky Mountain Blue Spruce.) While it is not as rapid in growth as the Norway Spruce (*P. excelsa*) it does possess the merit of longevity and none of the early deterioration that the latter does. The Rocky Mountain Blue Spruce has become well known and is a most useful lawn tree, though after twenty or thirty years it begins to lose that symmetry in form that at first recommends it for lawn planting. It is a mistake to expect any evergreen to show at maturity the symmetry that is usual in its juvenile stages. Many assume a distinct ornamental habit with age but are liable to demand much room for their development, and if this maturity is desired, room for such development must be allowed, thus requiring grounds of broad extent. Other spruces of high ornamental merit and American origin are the Menzies Spruce from Colorado, *P. sitchensis* or *Menziesii*, a dense growing, short leaved species from the Northwest; *P. nigra*, the Black Spruce, which is one of our most abundant northern species, comprising the major source of lumber supply for the East and well adapted for seashore planting, and *P. Engelmannii* from the Rocky Mountains, nearly like the Rocky Mountain Blue Spruce but with less rigid foliage, a tree bound to be of great value in future plant-

ing. From Japan, *P. polita*, the Tiger-tail Spruce, is a most distinct species, with very long, rigid, spiny foliage, thickly set around the branches, and with a distinct habit combining rapid, pyramidal growth with a semi-pendulous tendency of the branchlets. *P. ajanensis* and *P. Alcockiana* are similar in effect, of dense, small branched habit in youth, with short foliage thickly set on the branches; but the latter species is particularly noteworthy in the distinct silvery cast of the under surface of the foliage, and the former species in the brilliant crimson color of its young cones. Both have a distinct upward tendency of the branches and make beautiful lawn trees. The rare and beautiful *Picea Smithiana*, from Asia, is distinct in habit from any other species; the foliage is of a silvery green and the habit is decidedly pendulous in all stages. A native of the temperate regions of the Himalayas, it is one of our most remarkable hardy ornamental trees and can be grown successfully in warm, somewhat sheltered situations. To Europe we are indebted for the Norway Spruce (*P. excelsa*), the Oriental Spruce (*P. orientalis*), and the rare *P. Omorika*. The first has been planted more than any other species and for easy culture, rapid growth and hardihood has no rival. Unfortunately it will not stand smoky atmospheres, or dry situations, and under such circumstances is short lived and becomes more or less unsightly. However, some of our finest winter effects at present depend largely on this species, and probably for many years this will have a wide popularity. This species, too, is more prolific in varieties than any other, and the Golden-tipped, Finedon Hall variety, the pendulous *P. e. pendula*, the weeping *P. e. inverta*, the long branched, grotesque form known as *P. e. monstrosa*, the open habited *P. e. alata*, and the angular branched *P. e. eremita*, are noteworthy among the larger growing varieties, while in dwarfer forms such as *P. e. Ellwangeriana*, *P. e. dumosa*, *P. e. Clanbrasiliana*, *P. e. Gregoryana*, *P. e. pumila*, and *P. e. pygmæa*, the habit becomes dwarfed until the last mentioned varieties form but carpets of dense, thickly tufted foliage. A collection of varieties of the Norway Spruce alone would go far toward producing a varied and evergreen winter effect on any private grounds.

P. obovata is a species rather closely associated with the Norway

Tsuga Canadensis var. nana.

Tsuga Sieboldii.

Spruce, having a more slender growth and pendulous habit. *P. orientalis* is a most beautiful species, of densest habit, with very dark, thickly set foliage and slender branched growth, and a most useful lawn tree, somewhat slow in assuming a leader but eventually proving hardy in all but abnormally unfavorable conditions. *P. Omorika* on the other hand, while hardy, is seldom seen in New England and is confined to small, isolated areas in its native Servian habitat. Of slow growth when young, it is most interesting at present from its rarity.

Of Hemlocks the variety is greater than is ordinarily understood, for while the *Tsuga Canadensis* is a native of highest ornamental value, the Carolina Hemlock, (*T. Caroliniana*) is very distinct in habit, less dense in growth, and with broader, longer foliage. The Japanese *T. Sieboldii* in its youthful stage is a very upright species with short, dark green, thickly set foliage, while *T. diversifolia*, also Japanese, has even shorter, darker foliage, reddish bark, and a more slender habit. Western America produces two other species in *T. Mertensiana*, of very dense, upright habit, and *T. Albertiana*, similar in many respects to our native species but of more rapid growth. These two species form extensive forests in Oregon and Alaska and constitute a valuable timber supply. While all the species of Hemlocks are distinct, yet our native species will always be of greatest value for ornamental planting, combining hardihood, beautiful foliage, and graceful habit with ease of transplanting; this species is also rather prolific in varieties, of which the Sargent's Weeping Hemlock (*T. C.* var. *Sargenti pendula*) is a graceful tree of drooping habit. *T. Canadensis* var. *parvifolia*, of dense upright habit with dark green foliage; *T. C.* var. *alba spica*, oddly variegated with silvery spots; and *T. C.* var. *globosa*, of dense rounded growth, are examples.

The Douglas Fir (*Abietia Douglasii*) is one of our finest American species and forms the connecting link between the Spruces and Hemlocks. A native of the western states, where it forms immense forests of most valuable lumber, it takes kindly to our eastern soil and is a most ornamental species, preserving its lower branches to extreme age. The habit varies from a dense, broadly pyramidal tree with soft green foliage

to pendulous forms and silvery casts of color. It will hold its own in public appreciation as one of the most desirable of ornamental lawn trees.

In the Firs we have less diversity in habit than in other large conifers, but a number of species are hardy in our climate and can be recommended. For general planting the Silver Fir (*Abies concolor*), the Veitch's Fir (*A. Veitchii*) and Nordmann's Fir (*A. Nordmanniana*) will undoubtedly hold best in popular consideration and prove most valuable. Of our native species *A. balsamea* is rather short lived and seems to resent isolated planting. *A. Fraseri*, from the Southern Alleghanies, seems more permanent as a lawn tree and its distinction is that of denser growth and more thickly set foliage. A dwarf variety of our native Balsam Fir, (*A. b.*, var. *Hudsonica*) becomes a thickly branched evergreen shrub rarely exceeding a yard in height. Western America is very prolific in species of Firs of which the Silver Fir (*A. concolor*) aforementioned is truly a prince of trees, being of rapid growth with beautiful, long, thickly set foliage, varying from soft green to most showy silvery casts, and combining as well considerable variegation in general habit effect. No tree excites greater admiration than a good specimen of the Concolor Fir.

Other western species are *A. grandis*, less robust than others; *A. magnifica*, of columnar habit with a peculiar perpendicular arrangement of the foliage on the branchlets; *A. nobilis*, of dense heavy growth with beautiful foliage varying in color from dark green to silvery blue; and *A. lasiocarpa*, closely allied but inferior to the *concolor*. These last named are all less hardy than the *concolor*. From Japan, besides that beautiful Veitch's Fir (*A. Veitchii*) of rapid growth with rich, glossy green foliage comes the *A. homolepis* or *brachyphylla*, similar in general effect and equally beautiful though rare; but *A. firma* is distinct in its flat, whorled, more conical habit and peculiarly notched, dark green foliage.

From Southwest Europe we obtain the Nordmann's Fir with its rich, glossy, thick set foliage and beautifully symmetrical habit; but the range of species includes also the Cephalonian and Cilician Firs (*A. Cephalonica* and *A. Cilicica*) of broad habit, with sharp dense foliage and a peculiar upright tendency of the branches, and

Abietia Douglasii.

Juniperus Chinensis var. alba spica.

the Pinsapo Fir (*A. Pinsapo*) from the Sierras of Spain, of upright, densely branched growth with leaves of needle-like sharpness. The Common English Silver Fir (*A. pectinata*) seems similar to the American Silver Fir in its lack of adaptability to isolated planting; yet its weeping variety (*A. p. pendula*) thrives under proper conditions and is noteworthy for its grotesque ornamental effect.

The trees which have been mentioned are, with the exception of the dwarf varieties, of large size, requiring ample lawn space for full development, but as we pass to the Junipers and Cedars, Yews and Arbor Vitæs, we find trees of dwarfer stature or more columnar habit, that can be used to advantage on more restricted lawns.

Junipers, while comprising no very large growing trees, do combine great variation in habit with coloring of foliage, and are most valuable for grouping. Our ordinary Red Cedar, *Juniperus Virginiana*, is not as fully appreciated as it should be. In habit the tree varies from straight columnar to broadly pyramidal and weeping types, and the foliage ranges from deepest green to silvery and golden tones. The types recognized in nurseries at present include *J. V. pendula*, of drooping habit; *J. V. Schotti*, of upright columnar growth with light pea-green foliage; *J. V. tripartita*, with crested, densely branched habit; *J. V. alba spica*, a silver variegated form; and *J. V. glauca* or *elegans*, with distinct silvery hue. The Chinese Junipers are of dense columnar growth with glaucous foliage, showing in their varieties peculiar silvery blotch-like variegations (*J. Chinensis alba variegata*); or they are richly tinged with golden yellow as in *J. C. aurea*. A choice Japanese species, *J. Japonica*, is very distinct from the last in its fine, soft foliage, of deepest green in the type, with silver and gold variegations (*J. J.* var. *fœmina variegata* and *J. J. aurea variegata*). *J. excelsa* of Europe and Asia forms a medium sized tree of upright, conical habit with foliage somewhat similar to the American Juniper. *J. recurva*, of the sub-arctic Himalayas, is striking in its pendulous tendency and the foliage has a peculiar reddish tone, while the bark is conspicuously red. *J. drupacea* of southern Europe succeeds under favorable soil conditions and is distinct in its sharp, light green foliage set at right angles to the branchlets

and also in its abnormally large fruits. While those mentioned are generally of tree-like growth, the dwarf and prostrate forms are useful for grouping and covering effects. Our well known creeping or Savin Juniper (*J. procumbens*) is being extensively planted and the variety *aurea* with bright golden summer foliage is of value for contrast. *J. Sabina* is equally useful for low planting and its natural habit of densely covering the ground with its matlike branches is a suggestion of nature that is being copied by the landscape gardener. This too has distinct varieties in *J. S. tamariscifolia*, with darker foliage and broadly spreading, shrubby growth; the silvery variegated form (*J. S. variegata*), and a form known among nurserymen as the Waukegan Juniper, in which the foliage is of a rich bronzy green and the plant grows to a broad cup-like shape. Another distinct class of Junipers is represented by the Irish Juniper (*J. communis*, var. *Hibernica*) which forms a small columnar tree of light, soft green foliage effect, but the Swedish Juniper, another variety, is considerably hardier than the Irish.

Arbor Vitæs, locally known as Red Cedar, (*Thuya occidentalis*) have proved of great value in their use for screens and hedges, but are not as frequently grouped for their individual beauty as they should be. A specimen plant clothed completely to the ground is a really beautiful object. No conifer has proved more prolific in varieties, and the range in color and habit is remarkable, varying from darkest shades of green to silver and golden forms, and from strict columnar habit to weeping, globular, and prostrate growths. Of these the most valuable would include *T. o. ericoides*, *T. o. lutea*, *T. o.* George Peabody, *T. o. pendula*, *T. o. plicata*, *T. o. Spathæ*, *T. o. Vervœneana*, *T. o. Wareana* (*Sibirica.*)

Other species of Thuya include the Oriental Arbor Vitæ (*T. orientalis*) with lighter, more columnar habit than our common Arbor Vitæ and with golden and other varieties. Then our western species, *T. dolabrata*, is hardy under proper soil conditions and is very distinct in its foliage and general effect. This, too, has a distinct form in the silver leaved *T. d.* var. *variegata*. *T. Japonica*, of graceful habit, and *T. gigantea*, of columnar, massive growth, are not as generally hardy as the previously mentioned species.

Juniperus Sabina var. procumbens.

Thuya occidentalis var. aurea.

The Cypresses are another valuable class, comprising many varieties not adapted to our soils and climatic conditions, the Lawson's Cypress (*Cupressus Lawsoniana*) being an example of which the type and the variety *erectis viridis* alone can be grown here, and then only under special conditions. The Nootka Sound Arbor Vitæ (*C. Nootkatensis*) is somewhat hardier. On the other hand, most of the Japanese Cypresses known as Retinosporas succeed well in all but intensely sunny, wind-swept locations. Of these there is a great range in form and color of foliage and habit of growth. *Cupressus obtusa* forms a small, loose, pyramidal tree, from fifteen to twenty feet high, with rich, glossy green foliage. The variety *nana* has curiously crested foliage and a dense habit, varying in color from deepest green to golden tinges in its sub-varieties. *C. o. lycopodioides*, with rich, metallic-green foliage resembling club-moss; *C. o. filicoides*, with beautiful, fern-like foliage, and *C. o. pendula* are other distinct forms. *C. pisifera* is also productive of many varieties, varying in form from symmetrical, well branched pyramidal trees to dwarf, globular shrubs, and in color from greens through silver and gold tones. The other best varieties include *C. p. aurea*; *C. p. gracilis*; *C. p. plumosa*; *C. p. p. aurea*; *C. p. squarrosa*, etc.

Our native White Cedar is a true Cypress (*Cupressus thyoides*) and is beginning to be recognized as of some ornamental value. It will thrive on much dryer soils than its usual habitat would lead one to suppose.

The Chinese Cypress (*Cryptomeria Japonica*) is not sufficiently hardy to admit of general cultivation. Where it succeeds, however, it makes a narrowly conical tree, with reddish bark and drooping branchlets covered with short, pea-green foliage.

Of the true Cedars, the Mount Atlas Cedar (*Cedrus Atlantica*) and its silvery variety, *glauca*, are occasionally seen in sheltered locations but can hardly be recommended for general purposes.

The Yew family comprises a number of ornamental forms and the demarkation between tender and hardy sorts varies according to the nature of the soils and exposures in question.

None of the Cephalotaxi can be relied upon, though *Cephalotaxus Japonica fastigiata* is the most rugged. The English Yew (*Taxus baccata*) in shaded, sheltered locations forms a broad,

shrub-like tree, with dark foliage, and the golden leaved form known as *T. b.* var. *Washingtonii* is quite satisfactorily hardy; the pyramidal Irish Yew, *T. b. Hibernica*, when used in shady locations frequently proves hardy, and additional forms that prove satisfactory are *adpressa*, *ericoides*, and *glauca*. The American Ground Yew or Ground Hemlock forms dense carpets in shady woods and in open, sunny situations becomes more bush-like in effect. The foliage is of a rich, pleasing green. From Japan the *T. cuspidata* is received in two forms, one with dense, broad habit and short, stiff foliage; the other of more loose and open habit and longer, softer foliage. Both are very hardy.

Japan has provided us with another beautiful evergreen lawn tree, the Umbrella Pine (*Sciadopitys verticillata*) which is perfectly hardy, forming a narrow, pyramidal tree with darkest green foliage, arranged in curious whorls on the branches. Yew-like in its depth of color and foliage effect, yet distinct in affinity, this tree stands alone in its individuality and beauty. It has a variety with golden, variegated foliage, known as the Golden Leaved Umbrella Pine.

We have now considered those varieties of coniferous evergreens of known hardihood, noting their wide range in habit of growth and hue of foliage, and are able to conceive of the many and varied landscape effects for which they may be used, more especially in overcoming the usual monotony of the winter landscape.

We are now prepared to look into the question of the possibility of variety in broad leaved evergreens, and here Rhododendrons with their magnificent floral effects so varied in color in the Hybrid varieties, ranging from purest white to deepest crimson and shades of purple, with rare instances of yellow shades, naturally assume the highest importance. By a critical selection of varieties perfect hardihood can be assured, though their demands of cool, shady situations with abundant moisture must not be lost sight of, but while *Rhododendron Catawbiense* has been given full credit for its value, some other species have been neglected and are seldom planted, though *R. maximum*, a rare native, but abundant in some sections, is becoming an important plant of late for producing immediate effects by the transplanting of well developed plants from their native thickets. *R. punctatum* has a

Leucothoë Catesbæi.

smaller foliage than either *R. Catawbiense* or *R. maximum* but is useful in combination with both, while *R. Wilsonianum*, *R. hirsutum* and *R. ferrugineum* form still dwarfer growths and are useful for edging groups or in rockery plantings. Our native Mountain Laurel (*Kalmia latifolia*) has been slow in forcing itself into public and extended use, but newer methods of supply have brought about a revolution in its use and we can now enjoy its unique and unsurpassed flowers at less expense than in former years. The other native species, *K. glauca* and *K. angustifolia*, are useful, though they never will come into as general use as the ordinary mountain laurel. Of Azaleas as generally known under that name, we have but one hardy evergreen representative, *A. amœna*, with its small, glossy-green foliage and showy crimson or purple flowers.

In Andromedas or the Lily of the Valley trees we have no finer species than *A. floribunda*, which gives an effect of flower throughout the winter, though actually this effect is produced by the buds which form the fall previous and remain ready to open with the first warm weather of spring. *A. Japonica* is a second species of high merit and capable of rich effects with proper use. *A. calyculata* and *A. eatifolia* are other evergreen species of value.

There is a class of broad leaved evergreens that are noteworthy more for their foliage than for their flowers, and under this head we must include the Box plants which vary in the stature of the varieties from the Dwarf Box, used in old-fashioned gardens for edgings, to small tree effects produced in larger growing varieties, of which specimens are to be found in this vicinity some ten feet high. *Laurus schipkœnsis* is hardy and can be used to a limited extent in the same manner as Laurel is used in English gardens. Unfortunately, however, cost will prevent its extended use. The Holly-leaved Barberry (*Berberis ilicifolia*) and *Mahonia aquifolia* or Ash-berry are types of a family of evergreens varying in hardihood, those mentioned, however, being perfectly hardy forms. The Fire-thorn (*Cratœgus pyracantha*) is a useful evergreen either as a hedge plant or for groups with other shrubs. While frequent complaint is heard that the English Holly lacks hardihood, we must not lose sight of the fact that we have here our native American Holly, a close peer of even more rapid growth

and with fine broad foliage, brilliantly lightened up and enlivened in effect by its bright scarlet winter berries. Another native evergreen shrub that is much neglected is our Ink Berry, *Ilex glabra*, a plant with oval, shining green foliage and black berries, which forms a dense shrub attaining a mature height of four feet. Closely allied to this is a Japanese species, *I. crenata*, recently introduced and much sought for already. We also obtain a semi-evergreen effect from the California Privet.

Among vines we have the semi-evergreen effect of the Hall's Honeysuckle and *Akebia quinata;* the true evergreen effect of the English Ivy, which in shaded locations is occasionally seen to perfection even in this vicinity.

Broad-leaved evergreens of low growth include the Scotch Heathers, perfectly hardy subjects forming a mat on the surface of the ground and giving an abundance of bloom in shades of white, red, and purple, and some of the English Heaths such as *Erica tetralix*, *E. carnea* and its varieties, are hardy, while closely allied evergreens include *Cassiope hypnoides*, *Vaccinium Vitis-Idæa*, *Daphne Cneorum*, *Empetrum nigrum*, and *Ledum latifolium*, and European plant lovers are eager seekers for our Mayflower (*Epigæa repens*), Checkerberry (*Gaultheria procumbens*), Partridge Berry (*Mitchella repens*), and *Linnæa borealis*. The *Leiophyllum buxifolium* or Sand Myrtle is a useful plant for rockwork, and for such uses we may add the following: The Hardy Candytuft (*Iberis corifolia*, *I. sempervirens* and other varieties), the Creeping Thyme (*Thymus vulgaris*), some of the Speedwells (*Veronica incana*, etc.), *Heuchera sanguinea* with its broad, deeply indented, light colored foliage and bright crimson flowers, *Galax aphylla*, now so frequently used by the florist, in its bright glossy green or bronze red, round, toothed foliage; the Achilleas in their varied foliage and flowers as shown in *A. Ægyptiaca* with silvery foliage and lemon yellow flowers and *A. tomentosum* with matted, moss-like, soft green foliage, and golden yellow flowers; *Alyssum serpyllifolium* with silvery foliage and *A. saxatile* with broader foliage and both with golden flowers in spring. The Armerias or Thrifts give odd, pin-cushion-like effects, and vary in flower from white to crimson, and the Helianthemums or Rock Roses are a most charming class, with broadly spreading, thickly

matted foliage and flowers varying from white through yellows to crimsons. The Saxifrages are also distinct in their broad, rounded foliage, of a thick, leathery texture, taking on shades of crimson and purple, in addition to the summer greens, and *Sedum Sieboldii* is evergreen in its effect and charmingly graceful in its habit, while the Houseleeks or Sempervivums with their rosettes of spiny, pointed leaves, thickly clustered among the crevices of the rocks are quite unique and form a stepping stone toward the use of hardy Cacti of which we have perhaps a dozen species of more or less hardihood, among which *Opuntia vulgaris*, *O. Missouriensis* and *O. Rafinesquiana* are well known and to be depended upon. Of trailing and climbing plants that have not been noted, we can add the Bearberry (*Arctostaphylos Uva-ursi*), the rare and somewhat difficult *Lithospermum prostratum* with its rich blue flowers, the Periwinkle (*Vinca minor*) with its rich glossy green foliage and blue flowers, and even the Cranberry is a useful plant, particularly in moist spots.

There is still another class of plants of which no mention has been made—the hardy Bamboos, of which a list of some dozen varieties could be mentioned which are perfectly hardy, and of which the best and most distinct perhaps are *Bambusa erecta*, *B. Veitchii*, *Arundinaria Metake* and *A. nana*. In these there exists a confusion of names at present which requires close acquaintance to remedy. Their hardihood has only been proved of late, but a colony can be seen at the Arnold Arboretum which will show their variety at least.

This list is not a complete one, but I believe will serve to show that we have a great range of evergreen material to work with, and that there are possibilities for extending the interest in our gardens far beyond the flowering period of plants, and rendering such gardens attractive at least up to that period when snow deeply covers the ground.

The lecture was illustrated by stereopticon pictures of the trees described, some of which are reproduced here.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 19, 1901.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE TREES OF OUR NEIGHBORHOOD.

By Miss EMMA G. CUMMINGS, Brookline.

As I have long been interested in the study of trees, I determined a few years ago to make a more intimate acquaintance with them, especially with the trees growing in this vicinity.

With an enthusiastic companion many pleasant hours have been passed walking along the roads or wandering through the woodlands, and these walks have been filled with interesting and amusing incidents.

Once we lost our way in the woods back of the Brookline Country Club, and wandered about for hours, when, hearing the sound of music, we turned in that direction and before long found ourselves in sight of the open ground of the Country Club. But to our dismay the place was guarded by policemen and we dared not cross. At length a mounted officer approached us and we asked permission to cross the land, which at first he peremptorily refused. We explained our situation, and after many questions on his part, to satisfy himself that we were not trying to gain an unlawful entrance to the scene of the races, he offered to escort us across the grounds to the Clyde Street entrance, and this, just as a crowd of people were arriving for one of the May Meetings. By this means, however, we saw a Cut-Leaved Beech, the first that we had noticed in Brookline. We have seen several others since then, but none are so large and handsome as the famous Cut-Leaved or Fern-Leaved Beech in front of the Redwood Library at Newport, R. I. It is not a native tree, but a variety of the European Beech. Trees known as *cut-leaved* such as beeches and birches, also weeping varieties, and those with purple or copper-colored leaves are all propagated from individual trees, each known

as a *sport*. They are reproduced by cuttings, as the seedlings generally revert to the original form.

We have watched the trees in summer as well as in winter, when the study of the buds, and of their method of growth and branching is a fascinating one. Olive Thorne Miller says, "When the winds and frosts of Autumn have stripped the trees; and the leaves, which have formed the tender beauty of Spring and the glory of Summer lie prone in the dust, think not the beauty of the tree is departed. Then first it shows its undisguised *self*—its individuality."

In fact all seasons have a special interest. In winter alone, the leaf and flower buds peculiar to each species can be studied to advantage. With the spring comes the unfolding of these buds and flowers, the latter in some cases delayed into summer, when the trees in full foliage, and many already in fruit, are seen at their best. In autumn the leaves change color and fade, but in doing so the maples, oaks, and others take on a line of coloring each peculiar to itself, thus giving from season to season, and from summer to winter, a renewed interest in their appearance.

Our attention was first given to the native trees—that is, native or indigenous to the United States, and of these we found about one hundred. In consequence of our severe climate some of these trees are small, but in more favored localities they grow to a good size. Such are the Silver Bell and Fringe trees, hardly more than shrubs on our lawns, yet both are planted for their abundant showy white flowers. Such also are the Speckled Alder, and the small shrubby Magnolia, or Sweet Bay (*Magnolia glauca*) that grows in the swampy lands of Magnolia and Gloucester, but which in its southern home grows to be an evergreen tree of fifty to seventy-five feet in height. There the leaves remain on the branches with but little change of color, until the appearance of the new leaves in the spring, while in the northern states the leaves fall in early winter.

About forty-five kinds of trees are native in Brookline, the suburb or vicinity above alluded to. Some are growing in profusion, while others are represented by only a few specimens. To this number should be added a few not naturally wild in this region, but which have established themselves, and appear like

natives. They are Willows, Buckthorn, Locusts, Apples, and Cherries. They have not, however, strayed far into the woods, but are generally found near houses.

The large willow trees that we all remember to have seen growing by the side of streams or on low lands, are of European origin, probably brought over by the earliest settlers, and that includes both the upright and weeping willows. Of our native New England willows, but one assumes a tree form, the Black willow, and that is not common near Boston.

Locusts are not seen at their best here. They have suffered greatly from the ravages of the borer; otherwise they would be exceedingly valuable as timber trees. Of all our North American trees it is the one most commonly planted in central and northern Europe. I have scarcely ever seen anything so beautiful as the streets of a city in southern Spain in the month of April, when the locust and orange trees were in full bloom. Not until then did I appreciate the beauty of the locust tree.

We ought to feel satisfied with the variety of trees growing naturally in Brookline, when we learn that there are only between eighty and ninety species indigenous to New England, and a large proportion of these that are native in other parts of New England are planted in Brookline, including some of the Maples, Oaks, Mountain Ash, Butternut and Black Walnut. According to Professor Sargent's latest estimate there are in the Atlantic region three hundred and forty-three species, and in the Pacific region, including the Rocky Mountains, one hundred and sixty, besides seven common to both regions. This makes the total number in North America north of the Mexican border, five hundred and ten. New species are constantly turning up, especially of Hawthorns, so that it is possible that the number in the Atlantic regions will have to be still further increased.

Of the trees native to the Southern States we have growing in our midst, Magnólias, Locusts, Judas or Red-Bud, Virgilia, Liquid-ambar, Red Mulberry, and the Bald Cypress (*Taxodium distichum*). The latter, the most interesting and rarest of this group, is represented by a beautiful specimen near Gardner Road, on the Blake estate. It is easily identified by the passer-by, as it stands alone on open ground, and is a tall, symmetrical tree, conical in

shape. It belongs to the coniferous or evergreen group of trees, yet contrary to their custom, sheds its leaves in winter, as its name, *Bald*, or Deciduous Cypress indicates. At the South it covers vast areas of low land, and travelers who have seen it speak of its impressive height, with its branches covered with Tillandsia, the so-called Southern moss.

From the Western States we have the Kentucky Coffee tree, the American Crabapple (*Pyrus coronaria*), interesting for its beautiful fragrant flowers, and the fact that it comes into blossom ten or twelve days after all the other apples have shed their petals, yet it is less frequently planted than the Japanese varieties, the Ash-leaved maple, Osage-orange, which is used in the West and South quite extensively for hedges, and some of the Oaks. While from the North there are the Mountain Ash, Balm of Gilead, Balsam Fir, White Spruce, and Arbor Vitæ (*Thuya occidentalis*).* The Rocky Mountains furnish two trees, the Colorado Blue Spruce, and the Douglas Spruce or Fir, commercially one of the most valuable trees of the world. On the Pacific coast it grows to a height of two hundred feet and over; lumbermen say three hundred to three hundred and fifty feet. With the exception of the big trees (the Sequoias) of California, no tree equals it in massiveness of trunk or in productiveness of timber, and it is one of the most widely distributed trees of North America. I know of no large specimen in this neighborhood.

Beside these American trees we have drawn largely upon far distant parts of the world to beautify our lawns and roadways, and we can count as many, or more kinds of foreign trees growing in our midst as there are native ones. They come from Japan, China, Corea, the Himalaya Mountains, Persia, the Caucasus, Siberia, Northern Europe, and Southern Europe, bringing up the total number of species that we have seen in and about Brookline

*The Arbor Vitæ, used so much in New England for hedges, where it grows wild in wet soil, forms almost impenetrable thickets and is often called White Cedar. The local name of a tree is often very misleading. For instance, it is quite common to call any hard wood by the name of *iron* wood, and in the United States there are twelve different trees called ironwood; several kinds of trees are called cedars; six different pines are called Yellow Pine; and there are eight Balsams, and sixteen Junipers, each referring to different species, and often to different genera.

to two hundred and sixteen. Many of the exotics have been with us so long that there is no question about their adaptability to our climate, while others have not yet been proved to be thoroughly hardy.

Until about fifty years ago, the larger part of Brookline was covered with a growth of forest trees, and in some sections they still remain. Such is an area of about five hundred acres bounded by Heath, Hammond, Newton, and Clyde streets, where are still to be seen the finest specimens of Hemlocks and White Pines, and the only Black Ashes I know of in the town are here. A portion of this land bordering on Newton and Hammond streets has recently been reserved by the Park Commissioners. Would that they also had taken about fifty acres of land which is situated between Boylston street and the Boston & Albany railroad tracks, near the pumping station of the Boston Water Works at Chestnut Hill Reservoir. It is bounded on one side by Reservoir Lane, one of the most picturesque and rural roads still left to us and is accessible to everybody who wishes to visit it, being about five miles from the State House. It has proved to be one of our favorite haunts, for here grow thirty-five different species of native trees. Among them fine large old Chestnut trees, Black and Yellow Birches, five different Oaks, and four different Hickories, — the Shagbark (erroneously called Walnut), Mockernut, Pignut, and Bitternut. The Bitternut is the most beautiful and graceful of the four trees, yet its nuts are so bitter that even squirrels, except in dire extremity, will not eat them. The Pignut was formerly regarded as nearly worthless, but now a variety has been found with a thinner shell and without the bitter taste, which it is hoped under cultivation will produce nuts commercially as valuable as those of the Shagbark.

The region around Hammond's Pond, near the Newton line, has a special interest as being the location where White Cedar (*Cupressus thyoides*), Black Spruce, Poison Dogwood, and the American Larch are growing, for they are among the rarer trees of this vicinity.

The portion of Brookline known as Longwood (*long wood*) derived its name from a narrow strip of woodland formerly extending from Aspinwall Avenue to Commonwealth Avenue, near

St. Mary's street. This name was adopted about 1821 when the territory began to be cut up for summer residences. Until then, there were only two or three houses in this district; one was owned by Judge Sewall, for whom the present Sewall Avenue was named. Many of the oaks of this *long wood* are still standing, and here and there other fine trees.

The Boston and Brookline Parkway is an unusually picturesque drive for one so near to city limits. The natural features of the place have been made the most of, while the banks of what was Muddy River have been improved by judicious planting of native and foreign shrubs and trees. It affords an excellent place to study and compare the different maples, oaks, thorns, and so on, and it is to be hoped that in the near future enough public interest will be taken in this subject to induce the Park Commissioners to place labels on the trees — at least on the oldest and finest of them — especially the oaks, a hop hornbeam, and some black birches near the Longwood Avenue bridge, on the Boston side of the Parkway.

I once asked in the Parkway the assistance of a police officer in picking a specimen of a peculiar linden tree (*Tilia platyphyllos* var. *vitifolia*). Now it happened, as I afterwards learned, that the man was very fond of trees and knew a good deal about them. But this particular tree he did not know, and when I called it a Linden, he said, "If that is a Linden, it is different from any that I have ever seen," and to find out if I knew of what I was talking, he tested my knowledge on some of the surrounding oaks and maples. Finding that I was not altogether ignorant, he told me of his great love for trees, and how very few people with whom he came in contact knew one tree from another. After a little further talk about the neighboring trees, I left him, glad to have seen one who made it his pleasure to observe and know the trees while on his round of duty.

We in Brookline are fortunate in having within our town limits a considerable extent of high land, more or less rocky, and low, swampy ground, all favorable to the growth of a great variety of species. Large estates of wealthy residents contain many planted trees, and on one in particular, the estate of Professor Charles S. Sargent are to be found a great variety of exotics, which are not seen elsewhere.

Some years ago foreign trees were extensively planted along our streets and avenues, almost to the exclusion of our native species. Many objections were raised, and now the tendency in planting seems to be in favor of native trees. We should all regret, I am sure, if our wayside trees were exclusively native, when we consider that it is to the European maples, beeches, elms, ashes, oaks, and hawthorns that we owe so much that is beautiful in the autumn. If you have never noticed, do so this year, that when many trees have lost their leaves and stand with bare branches outlined against the sky, there are others with foliage still bright and green, and they are pretty sure to be the foreigners just alluded to. These, all without an exception, hold their foliage longer than our native trees, and make bright, attractive spots in the landscape, at a season when our country would look dreary without them. It is surprising for how long a time the green clings to them. It is until late November and even into December, when the beeches alone are left, and on their branches the brown leaves remain, as they do on some of our oaks, all winter, or until the coming of the new leaves in the spring.

Since 1899 our town has appropriated $2000 a year for planting trees, and for the care of them along the highways. In 1895 a Town Nursery was established which for a time furnished all the trees needed. Over 6,000 trees have been set out, and many have been cut down, sometimes to prevent over-crowding, sometimes for the cutting through of new streets, or widening of others. We regret the loss of a fine group of American Linden trees, that were cut down to make room for the electric cars on Boylston street; also the loss of two rare trees, a striped maple, and a hackberry (*Celtis occidentalis*), which were cut down on account of the grading of the same Boulevard.

If some of our trees are undersize, certainly some are remarkably large, and for a stroll in the woods it is always well to include, beside a note-book, a measuring tape in one's pocket, for without actual measurements it is not safe to determine the size of a tree.

In the woods off Clyde street one day I came upon some very large trees, which at first, from their general appearance, I took

to be oaks. To my amazement, a closer view showed them to be red maples, one of them measuring in circumference at five feet from the ground eleven feet and two inches, or a diameter of three feet and six inches. Not many red maples in this vicinity are more than a foot and a half in diameter, the comparison of which shows the unusual size of the Clyde street maple.

On the south side of Corey Hill is a very remarkable group of sassafras trees. In this State sassafras is usually a shrub or small tree, but here are half a dozen trees, the smallest of which is six feet in circumference, and the largest measures nine feet and seven inches, and has a diameter of three feet.

In Longwood, on a portion of the old wooded ridge, now the Sears estate, there are three trees with low, wide-spreading branches, of which, when first seen in the winter, we had to confess ignorance, but later recognized them to be the white mulberry (*Morus alba*), one with the astonishingly large girth of seven feet and six inches. This tree is a native of China, and is cultivated in Japan, India, and the countries along the Mediterranean for its leaves, which furnish the best food for the silkworm. Some sixty years ago the hope of establishing the silk industry in the United States led to to the greatest horticultural speculation the country has ever known. Nurserymen and farmers covered their lands with mulberry trees, planting a variety of the white mulberry, but the climate in the north proved to be too severe for this variety, and in the course of a few years most of the trees died, thus ruining thousands of people. I have tried to learn something of the history of this Longwood group of mulberry trees, but so far have been unsuccessful. It would be interesting to know whether they were planted about the time of this mulberry enterprise, which was known as the "Morus Multicaulis Speculation."

Though we have a good many large Chestnut trees within our town limits, probably the largest one is found on the Boston side of the line. Standing alone in a field, it has had an exceptional chance to spread in every direction, and although the branches are now decaying, it does not affect the enormous size of its trunk which is sixteen feet nine inches in circumference, and five feet four inches in diameter.

On the Boston side, also, is a magnificent specimen of a Buttonwood or Sycamore tree, measuring a little less than fourteen feet around the close bark of its trunk, and very nearly holding this size to the first branch, a height of twenty feet. A fungus has attacked buttonwood trees which causes them to lose their leaves in the early summer, and then they have to put forth a second crop of leaves, which great expenditure of energy has crippled, or left them in a far from good condition. It would seem as if this tree had escaped some of the misfortunes of its kind, and thus had opportunity to increase in beauty from year to year, and its position has been somewhat sheltered by the numerous elm trees in its immediate vicinity.

These buttonwoods which are among the largest deciduous trees in America, grow to a very large size in the Mississippi Valley, where it would not be unusual to see them with a trunk three times as large as the one I have described. A lady living in its vicinity tells me that she remembers the tree fifty years ago, and that it seemed to her then, a large tree. It is often called Sycamore, and in England it is called the Occidental Plane, to distinguish it from the Asiatic tree which is called the Oriental Plane. The name Sycamore as used in England is generally applied to the Sycamore maple, while in the East a sycamore is a fig tree.

Around the shores of Jamaica Pond in Jamaica Plain, can be seen some very interesting trees, many on the land bought by the City of Boston for a Park Reservation from the estate of the late Francis Parkman and set out by that lover of trees.

The rarest and most remarkable tree is a Hybrid Walnut, on the grounds of Mr. Eben Bacon. It is a cross between our native butternut and the English walnut (*Juglans cinerea* × *regia*). The tree is supposed to have been planted between fifty and sixty years ago. "Garden and Forest" states "there are only two others, so far as is known, in the neighborhood of Boston, one in Cambridge on the Episcopal College grounds, and one in Milton near Houghton's Pond. The three trees resemble each other, and had evidently the same origin, though there is no record to tell their history, and nothing but the apparent intermediate character between two well known species, and their comparative barrenness to justify the belief that they are hybrids."

The most remarkable, as regards size, is an Amelanchier, formerly on the Morse estate, and commonly known as the shad bush. It is usually a bush or shrub, but here it has grown to the height of thirty or forty feet with perhaps a distance of fifteen feet to the first branching. This tree would have been cut down in the laying out of the pathway but for the remonstrance of one who knew and appreciated its value.

The next in interest as regards size is a Striped maple (*Acer Pennsylvanicum*), or Moose Wood. In the Maine woods the tender young branches are a favorite food of the moose; hence the origin of its popular name.

There are Magnolias—the Sweet Bay, and the Large-leaved magnolia (*Magnolia macrophylla*). Its leaves are often from twenty to thirty inches long, and the creamy white flowers from ten to eleven inches across—flowers and leaves being more conspicuous than those produced by any other tree of the North American forests. It was introduced into European gardens a hundred years ago. Another species of magnolia (*M. Acuminata*) popularly called the cucumber tree, because its fruit resembles a cucumber, has been even more extensively cultivated in Europe and in our own northern states. We have counted nine species of magnolias cultivated in our limited area, five oriental and four American species.

Others of special interest are a good sized Silver Bell tree (*Mohrodendron Carolinum*), and a Crab Apple known as Parkman's Crab. This very tree was sent by Mr. F. Gordon Dexter from Japan about 1863, and found a home in Mr. Parkman's garden. It came without a name, and was christened Parkmani,—Pyrus is the botanical name of the genus to which apples belong, so it was called "Pyrus Parkmani." The sames species was afterwards sent to this country by Dr. G. R. Hall, an American physician long resident in Japan, and consequently it then received another name, *Halleana*. It now appears in trade catalogues under both names. It is very similar to the beautiful flowering crab known as *floribunda* from the abundance of its flowers. These Japanese crabs are particularly attractive just before the deep crimson buds expand and show the lighter colors of the interior of the flowers. A little further around the pond is a Tupelo

tree, a species once numerous in the lowlands of this neighborhood, with its shining green foliage in the summer, changing to brilliant red in the autumn.

Unless it be an unfavorable year some of our trees are in bloom from March to December. White or Silver maples take the lead, and they may be in bloom as early as the first week in March. They are quickly followed through the month by poplars, willows, American elms, and red maples.

In April come the yellow-green catkins of the birches, the English elms, ashes, some of the conifers and the Japanese magnolias, the magnolias that bloom before the leaves are out; also the European maples, principally the Norway, with its showy clusters of light yellowish green flowers, followed by the Sycamore maple, with its hanging racemes. These are the two European maples so commonly planted.

May brings the greatest wealth of blossoms; chief among them fruit trees—pear, cherry, and the most beautiful of all, the pink and white blossoms of the apple. Closely vying with them are hawthorns and horse chestnuts, which we might think as beautiful as the apples if we saw them in the same quantity. Then cornels, viburnums, and a host of others, many not as showy, such as the beeches, hickories, walnuts, and oaks.

In June the tulip tree blooms, the wood of which is known as white wood, and is so extensively used in all parts of the country, and the Virgilia (*Cladrastis lutea*) with its conspicuous hanging white flowers, of which a fine specimen is growing in the Public Library yard. It is one of the rarer North American forest trees, but one of the most beautiful flowering, although the flowers come in profusion only every other year. Also the Golden Laburnum and one of the Catalpas (*Catalpa Catalpa*) which somewhat resembles the horse chestnut, with its upright panicles of whitish flowers; and by the last of the month the air is filled with fragrance from the blossoms of the European Lindens. These are just gone, when our American Lindens follow in July, and soon the tops of the chestnut trees are all aglow with blossoms. With one exception, the chestnuts are the last of our native trees to bloom. Being one of the last to bloom, it is nevertheless one of the first to ripen its fruit and I have heard it called the "smartest tree" for this reason.

Now comes another interest in foreign trees; for as ours are fading, they fill the gap until autumn. There is a tree called *Koelreutèria paniculata*, having no English name, which in midsummer shows its great panicles of yellow flowers, followed in due season by light colored bladdery pods, which are conspicuous on the tree even after the leaves have fallen. There is a good specimen here in Boston in the Public Garden.

Two trees from China furnish showy blossoms in August, a month when everyone who can, leaves the city, and thereby misses the sight of these attractive trees. They are Sophora (*Sophora Japonica*), and a Sumac (*Rhus Osbeckii*). Besides two or three Sophora trees in Brookline, there is a very noticeable one on the Public Garden near the Ether Monument. The sumac is a shapely small tree growing on the Boston side of the Parkway, and can easily be seen from the electric cars, as one passes the Parkway on Huntington avenue.

In September, we would naturally say there is no tree that will bloom in this month, but yes—when the late September and October days come, there is the cheerful little star of the Witch Hazel, shining like spots of gold in the midst of decaying leaves and brown branches. Through November and even into December, when the trees have lost their leaves, these pretty little flowers are seen at their best. It is perhaps in January and February that the bright yellow and red twigs of willows and cornels, as well as the red berries of the mountain ash and hawthorns are most appreciated. These, with the conifers, offer the most striking attractions for the winter months, or until March returns, and the silver maples again greet our eyes.

Although these references have been mostly to Brookline trees, the same things can be said of the trees elsewhere. Right here in the midst of this city of Boston, the Common and Public Garden offer excellent places to study trees. There is a good variety, including some fifty-three or more species in the Public Garden alone, and many of them are labelled. There are native trees as well as foreign that blossom through successive months.

The surrounding towns offer still greater advantages. After studying cultivated trees, it ought to stimulate an interest to find them growing in wild places, and to know them is to love them.

It is hoped that this sketch of trees will lead others to find what a world of beauty and enjoyment lies around us.

Who that has seen in the Spring the scarlet flowers and fruit of the red maple, the delicate drooping clusters of the sugar maple, the snowy whiteness of the fruit trees, set off by the delicacy and richness of the tints of young leaves of the birches, beeches, oaks, and others—who, I ask, that has seen them, can willingly spend these days in a city? It is like fairyland, if we but think so, made still more delusive by the singing of returning birds, and the occasional glimpse of some bit of their brilliant plumage as they flit from limb to limb and tree to tree but partially concealed amid the half open foliage. Who that has seen it and felt the enchantment on a bright sunshiny day, can resist it? We give ourselves up to the spell, for in our capricious climate these perfect spring days are rare, and we say to ourselves the years are too few.

Discussion.

J. W. Manning said that he had probably the largest tree of *Rhus Osbeckii* in America. The trunk is a foot in diameter, and the top spreads twenty-five feet. It blooms at the same time with the Sophora, and is very beautiful. He spoke of an elm planted on the day of the battle of Lexington and Concord on the Joshua Gowing estate in Wilmington; it is now seven feet or more in diameter, and spreads one hundred and thirty-five feet. He also mentioned a famous hemlock, eighty feet high and the same in spread, with a circumference of eighteen feet, on the Jacquith estate near the Burlington road. It was known as "the great hemlock," seventy-one years ago.

Hon. Aaron Low said that when he was in the army in Louisiana, he camped in a magnolia grove. The trees were from one hundred to one-hundred and fifty feet high and covered with blossoms. He spoke also of the bay trees, completely covered with pink blossoms before the foliage came out.

Benjamin P. Ware had been extremely interested in the lecture. Few people, he said, notice the great variety of trees about them. They lose much by not observing them. He spoke of the magnolias growing in a swamp in Manchester, the most northern location of the magnolia.

The President said he had been exceedingly interested in the lecture and was further interested to see a lady who had such a love for trees and such a knowledge of them. He has planted a good many trees, some of which are now of stately growth. Every year brings some new tree to try. A locust tree in Worcester has a circumference of twelve feet, and bark four inches thick. It was planted years ago by Mr. Green, the grandfather of Hon. Andrew H. Green.

The Silver Bell sometimes grows to fifteen or twenty feet in height, and is a magnificent sight in flower. The White Fringe is usually a shrub, but with cultivation can be grown to a large tree.

The speaker has fifteen kinds of magnolias; among them two large-leaved, *M. tripetala* and *M. macrophylla*, if protected the first few years, will flourish well. The latter is not so hardy as the former; it grows so late as to be injured by the winter unless protected. Mr. Hunnewell has a fine specimen. It is perhaps the best of all the magnolias. The speaker has also *M. Soulangeana*, *M. conspicua*, and a new one called Alexandrina, which will probably prove one of the best. Even if magnolias fail to bloom the leaves make them worth cultivation.

The Black Walnut is not as much cultivated as it deserves to be. Its leaves are very graceful and beautiful, and it bears an abundance of fruit. There is a new variety from Japan. There are in Worcester black walnut trees ten feet in circumference, and forty feet high. The speaker has in his house a cabinet made from a black walnut tree which he planted.

In Leicester there were formerly a large number of mulberry trees in a place called Mulberry grove.

Jacob W. Manning spoke of a group of Pawpaw trees twenty feet high, growing in a garden in Lowell. Pawpaws are not always hardy but these seem to grow well. There is a White Mulberry tree in Chelmsford four feet in diameter and sixty feet high, with a spread of branches of more than sixty feet.

Robert Manning said he has two Pawpaw trees. They are quite hardy and he had no difficulty in transplanting them, but though they had blossomed, they had never set any fruit.

He wondered how many people had ever seen the young cones of the Larch trees when they first come out in the spring. The

pistillate and staminate flowers of the larch are very charming when closely examined.

The President said that he has three varieties of larch, one European and two Japanese. The cones are exceedingly beautiful and also the foliage. The foliage of *Larix Kœmpferi* is unlike that of any other.

J. W. Manning spoke of a Basswood on the Beebe estate in Wakefield, seventeen feet in circumference and eighty feet high.

Thomas Harrison wished to call the attention of the lecturer to a Linden in Plymouth, which he thought the finest specimen in this vicinity.

A vote of thanks was given Miss Cummings for her very interesting and instructive lecture.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 26, 1901.

A Meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

A VISIT TO KEW GARDENS AND HAMPTON COURT.

By BENJAMIN P. WARE, Marblehead.

Among the many interesting subjects suggested by a journey through Germany, France, England, and Ireland, I think no one more appropriate for this Society, than my visit to Kew Garden and Hampton Court.

Kew Garden was originally a private fruit and vegetable garden of seventeen acres, belonging to the Prince of Wales, the father of George III, who began to improve it as a botanical garden and pleasure ground in 1730.

It has received additions from time to time, so that at present it contains two hundred and seventy acres, continuing as private royal grounds until 1840, when it became public and was placed

under the control of Her Majesty's Office of Public Works, with an annual appropriation for its maintenance of £32,650 or $163,250. It is said to be the finest and most complete botanical collection and arboretum in the world. As for tree planting it can hardly be excelled. Kew Garden is seven miles from the centre of London and is accessible by steamboat, omnibus, or steam railroad.

The surface is undulating, with carriage drives around and through the grounds; with broad graveled walks in various directions, opening long vistas through well grown trees, some in rows but generally irregularly planted, with plenty of room for the full development of each tree. Every variety of tree, shrub, and herbaceous plant is plainly labeled, giving an admirable opportunity for study. It was intended that every variety that would grow in that climate should be represented in its very best possible condition, and as the winters in England are much milder than ours of New England many more varieties may be grown there than here.

It is very delightful when traveling in a strange land, to meet any one from your own country, even though an entire stranger at home. I found it even so, to see in this collection specimens of our beautiful white pine, hemlock, spruce, elm, mountain ash, white ash, and oaks; and among the herbaceous plants, our fall asters and golden-rod in variety, and many other familiar friends in perfection, and not excelled in beauty by those of any other country. As tree planting began there more than one hundred and fifty years ago, some of the trees are of large size. Among the more noticeable are a dozen or more Cedars of Lebanon of immense size, four or four and one-half feet in diameter. As they stand well apart, and were allowed to branch out near the ground, they grow in a form peculiar to that species; with their deep green, compact foliage and majestic forms they readily command the attention and respect given to this tree by early scripture writers, who frequently used the Cedars of Lebanon as symbols of strength, beauty, and grandeur. The fragrance and durability of its wood caused it to be sought and largely used in building King David's Palace, and Solomon's Temple. So abundant was it on Mount Lebanon, as to cover it with forest growth, affording material for

four score thousand hewers, in getting out timber for the temple. But alas! like our own forest, they have disappeared. In the sixth century Justinian found it difficult to procure cedar enough to cover a single church. Belon, in 1550, counted but twenty-eight trees; De la Roque, in 1588, found twenty; Pococke, in 1740, found but fifteen in that vicinity, the largest sixteen feet in diameter.

Near this group of cedars in the garden is an immense Scotch Pine, towering above all others, with a clean trunk, about one hundred feet to its first branches.

As an arboretum, Kew Garden compares favorably with our own Arnold Arboretum. The shrubs are in such great variety, so well grown and so plainly labeled that they afford a superior opportunity for study. Rhododendrons are especially fine here, as well as in other parts of England.

A wonderful collection of over six thousand flowering, hardy herbaceous plants, embracing more than one thousand varieties, may be seen here, all distinctly labeled; among them the original wild chrysanthemum brought from the hills of China one hundred and five years ago. It was the first introduction into Europe, making our magnificent chrysanthemum shows possible, as well as the one held last November at the Royal Aquarium in London, where its small yellow flower was shown in contrast with the latest triumph of the florist, a flower fifteen inches in diameter.

The most noticeable structure in the garden is the Chinese Pagoda, built in 1761. It is one hundred and sixty-one feet high, a magnificent structure, made especially conspicuous by the lay out of the landscape, so that it may be seen directly in front from several points, through long irregular lines of trees. Another very prominent object is the flag staff, a single spar of Douglass Pine brought from Colorado, supposed to have been two hundred and fifty years old. It is one hundred and sixty-three feet high, with twelve feet under ground, enclosed in solid brick work, to insure its security from wind and decay.

The palm house is probably unequaled in beauty and grandeur the world over. It is three hundred and sixty-two feet long with an ell on each side of fifty feet, one hundred feet wide, sixty-six

feet high, and filled with a great variety of palms and plants requiring the same conditions. Many have grown as high as the top of the building, and all are in perfect condition.

The horticultural museum is a large three story brick building, containing an herbarium, library, and many horticultural curiosities of interest. Between these two principal buildings is a very beautiful artificial pond, which makes a frontage for each building. The pond is alive with goldfish, swans, pelicans, ornamental ducks of the most beautiful varieties, and other water fowl. Around this pond are beds of flowers of the most brilliant and showy kinds. The beds are of artistic design and planting, with the intent of making this part of the garden the fairy scene that it is, beggaring description.

There is a wood museum, containing specimens of wood from all of the British Colonies, and other countries, with some curious freaks of growth; also seventeen or more greenhouses adapted to the needs of different families of plants supplying each with the necessary conditions for their best development. One of them is devoted to exotic water lilies, among which the *Victoria regia* is prominent.

Another is devoted to the cultivation of the citrus family of fruits, and another to the cactus in great variety. Among the many varieties of trees, some are of very curious habits of growth. Especially noticeable is the Chili Pine (Araucaria,) sometimes called the monkey puzzle, I suppose from the difficulty a monkey would have in climbing through it. A portion of the ground is set apart as a wild garden, with a perfect tangle of trees, shrubs, and herbaceous plants, in an apparent haphazard manner without order or design, and yet displaying much hidden artistic skill in the arrangement.

A conveniently designed temperance house for the benefit of the crowds of visitors during the season is centrally located amidst this beautiful garden scenery.

Miss Marianne North, an exquisite flower painter, devoted her life to travelling the world over, painting from nature flowers found in her extended travels, thus producing a true picture of each. Her collection contained eight hundred and thirty-three pictures, which she gave to the garden for the benefit of the public. They

are arranged in a brick building which she provided especially for them, adding very much to the beauty and interest of the garden. Where there are no flower beds the surface is a beautiful English lawn, such as we have often read of; so closely shorn, so green, so soft is it, that one is reminded of a velvet carpet. The signs are not "keep off the grass," but "please do not tread upon the edge of the grass," which is kept square and clean cut. When any portion of these lawns shows signs of exhaustion, the sod is carefully taken up in rolls, a heavy coat of old stable manure forked in, then the sod is replaced so carefully that no sign of its removal is noticed.

Kew Garden is so accessible, so beautiful, and so instructive, that it is not surprising that as many as ninety thousand people have visited it in a single day.

The Palace at Hampton Court is fifteen miles distant from London, and seven miles beyond Kew Garden, and is reached by the same lines of travel, continuing through Kew and Richmond by omnibus, or, if one prefers, by a coach and four-in-hand from Piccadilly Circus on Sunday mornings. The approach to the Palace is through Bushy Park of four hundred acres, by a broad avenue about one mile long. On each side of this avenue are fine rows of horse chestnut trees set fifty feet apart. These trees are two or three feet in diameter and about eighty feet high and cover a space, including the avenue, with their shade not less than eight hundred feet wide. Fancy them in May, when in full bloom; such a display of beauty and magnificence would alone repay one for going to London to see it. This park is occupied as a deer park and there are hundreds of deer as tame as sheep, feeding or basking on this immense lawn, singly or in groups. The Palace is an imposing structure of brick with stone trimmings, forming three quadrangles, surrounding an open court on three sides. Two of these were built by Cardinal Wolsey early in the fifteenth century, and when finished presented by him to Henry VIII. The beautiful Eastern front was built by Sir Christopher Wren in 1689 for William III, and is three hundred and thirty feet long. Much of English history during the reign of the Tudors was associated with Hampton Court; Edward VI was born there, and there his mother Queen Jane Seymour died. It was the prison of Charles I for many years, and Oliver Cromwell delighted to make it his

residence for much of his time. There are at the present time thirty-six rooms open to the public in the Palace; they are all finished in oak, the door and window frames richly carved. The walls of all are hung with fine paintings of various subjects. Full length portraits of kings, queens, and other famous persons are numerous among the works of the old masters. One room is wholly devoted to the pictures of Benjamin West; another contains the famous cartoons of Raphael. As the rooms are all connected by doors, they appear like a continuous picture gallery, containing in all eight hundred and ninety-seven pictures. Each room had its special use when occupied by the royal families in years of long ago, and still retains most of the furniture then used. The Queen's sleeping chamber contains a richly carved bedstead eight feet wide (the usual breadth of royal bedsteads throughout Europe) with a very high canopy at the head; the mattresses are covered with satin, and the other furniture upholstered with rich silk velvet.

The great hall built by Henry VIII, from its size, height, gorgeous stained glass windows, elaborately wrought roof, and walls hung with immense elegant tapestries, is decidedly the most magnificent hall of any in the Tudor Palaces. For three and a half centuries it was used for state functions, royal banquets, receptions of foreign ambassadors and theatrical performances. It is said that here King Henry often sat in state or danced with his favorites, Jane Seymour and Catharine Howard.

The Queen's Chapel is still in use for the people living in the vicinity. I attended the High English Church service the Sunday that I was there.

The garden of forty-four acres was laid out on each side of the Palace by William III. The right side, called the pond garden, is in the Dutch style, with elevated terraces, sunken paneled lawns, arcade walks formed by flowering shrubs, flower beds, and a goldfish pond. And here is the cold grapery, containing the famous Black Hamburg grape vine one hundred and thirty-two years old. The stem at the entrance of the glass house is one foot in diameter. There it sends out three or four branches three inches in diameter. These are trained so the whole roof of one hundred feet long and forty feet wide is completely covered;

and so carefully pruned and thinned are the bunches of grapes, that the crop of twelve hundred clusters hang at about equal distances of one foot apart from every part of the vine. As I saw them, fully ripe and well colored, they presented a sight that I never shall forget.

These grapes were subject to the late Queen's orders, who sent them to hospitals and to the sick, but she had graciously refrained from having a single bunch cut until I had seen them in their full glory. This enormous crop is maintained by an annual application of a heavy coat of old stable manure and ground bone, which is forked into a plot of ground, about as large as the grapery, just across a graveled roadway, the main roots passing under the road to this feeding plot.

The part of the garden on the other side of the Palace is differently arranged, and principally planted with larger shrubs and trees. Here is a maze, and unless you have your nerves well under control of a strong will power I would not advise any one to enter alone, for there is danger of a panic that might prove injurious.

Standing in front of the beautiful and imposing principal façade of the Palace one looks out upon a vast expanse of park scenery of eleven thousand acres. In the foreground is a fountain and in front is the Yew Park, planted with Yew trees two hundred years ago. These with their very thick, deep green foliage, the pistillate plants bearing an abundance of bright scarlet berries, present a very beautiful and unique feature in the landscape. They seldom grow higher than thirty feet but with a very large thick trunk. They live to a great age. There are several in England supposed to be from seven hundred to a thousand years old. There is one at Darley, Derbyshire that is fifty-five feet high, with a trunk nineteen feet and three inches in diameter; others, in Scotland and Ireland, are of about the same size, and are supposed to be as old as the Christian era. Virgil and Pliny both declared that the Yew tree was neither useful nor ornamental, but noxious and deadly poisonous in both foliage and fruit, while others have since said with equal authority of the foliage, that even its shade might be injurious, but the berries may be eaten with impunity. I ate of them without injury. The timber is comparatively indestructible and is of a beautiful brown color, and

takes a fine finish. It was formerly much sought for as being the best material for the long bow, used by the ancient English archers. It was regarded with great superstition by the heathen nations of old as being associated with death, but by Christians as emblematical of immortality, and, therefore, it has been much planted in cemeteries.

Opening out from the Yew Park, fan-like, are five broad graveled walks about fifty feet wide extending as far as the eye can reach. The middle one ends in a pond of the same width, well stocked with fish for the angler, and used as a skating rink in the winter. These walks are lined on each side with full grown English elms and linden trees about eighty feet high, with trunks from two to four feet in diameter. The branches of these trees are trimmed up uniformly about eight feet from the ground, showing an even uniform surface under the trees for the whole distance, a system of tree planting entirely different from that at Kew Garden, but beautiful in its oddity.

Far beyond, out of sight, is the Queen's farm, where formerly she kept her dairy, and bred Durham and other cattle, besides choice swine and sheep. She had relaxed her interest in those somewhat, but continued to breed cream-colored horses for her state team of eight to be used only on great State occasions, and three-quarter thoroughbred saddle horses, of which fifty or more are required for use at the Mews or royal stables at Buckingham Palace in the city of London.

On motion of Thomas Harrison a vote of thanks to Mr. Ware for his interesting and instructive lecture was passed.

At the close of the lecture twenty steriopticon views in Kew Gardens and vicinity were given by John K. M. L. Farquhar, which added much to the interest of the lecture.

BUSINESS MEETING.

SATURDAY, February 2, 1901.

An adjourned meeting of the Society was holden at eleven o'clock today, the President, O. B. HADWEN, in the chair.

The Annual Report of the Committee on School Gardens, School Herbariums, and Children's Herbariums was presented by Henry L. Clapp, Chairman, who gave a verbal abstract of the Report. The Report was accepted and referred to the Committee on Publication.

Joseph H. Woodford, Chairman of the Committee of Arrangements, reported the following vote, which had been unanimously adopted by that Committee:

At a meeting of the Committee of Arrangements held this day, February 2, 1901, it was voted to omit the exhibitions scheduled to be held on May 4th, May 18th, June 5th and 6th, and June 15th, owing to our having to vacate this building on May 1st. The Society's first exhibition in the New Hall will be the Rose and Strawberry Exhibition on June 20th and 21st.

J. H. WOODFORD,
Chairman Committee of Arrangements.

A copy of a letter from Charles S. Sargent of the Building Committee to the Chairman of the Committee of Arrangements, relating to the time when the new building of the Society would be ready for use, and a letter from William J. Stewart, Secretary of the Building Committee, to the Secretary of the Society, on the same subject, were read.

The report of the Committee of Arrangements was accepted, and the changes adopted by that Committee, as reported in the above vote, were confirmed.

Ex-President William C. Strong, to whom, as a sub-Committee of one, the matter of the meeting of the American Pomological Society was entrusted by the Executive Committee, to which it had been referred, stated that it was not deemed advisable to appoint delegates at the present time, but recommended that the Secretary notify the Pomological Society that delegates will be appointed.

Mr. Strong also, as Chairman of the Committee appointed on the 3d day of March, 1900, to confer with the Boston Co-operative Flower Growers' Association in regard to holding the next Carnation Exhibition of that Association in Horticultural Hall, reported that the Committee had conferred with the Flower Growers' Association, but that no conclusion had yet been reached.

On motion of Ex-President William H. Spooner, it was voted that the use of one of the Society's Halls be offered to the Co-operative Flower Growers' Association for their Carnation Exhibition the present year.

Mr. Spooner also moved that a Committee of three be appointed to procure a portrait of Ex-President Appleton. The motion was carried, and the Chair appointed as that Committee, Mr. Spooner, Benjamin M. Watson, and C. Minot Weld.

A letter was read from Charles E. Cotting offering to the Society, in behalf of the Trustees of the Paddock Building, the purchasers of the Horticultural Hall estate, the statues now on the building, to be removed by the Society prior to the termination of the existing lease; also offering to give and deliver, when the building is torn down, any box which may be found in the corner stone.

It was voted that the offer be accepted on the terms mentioned, and that the thanks of the Society be presented therefor; also that the Secretary inform Mr. Cotting that the Society would be glad to retain the two marble tablets in the staircase hall, commemorating the foundation of Mount Auburn Cemetery by the Society and the erection of the present building.

The following named persons, having been recommended by the Executive Committee for membership in the Society, were on ballot duly elected:

HENRY ILLENBERGER, of Brookline.
DAVID WELCH, of Dorchester.
MISS JEMIMA R. WILDER, of Dorchester.
MISS GRACE S. WILDER, of Dorchester.
JAMES B. SHEA, of Jamaica Plain.
MRS. THACHER LORING, of Brookline.

Adjourned to Saturday, March 2.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 9, 1901.

A Meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

GROWING AND EXHIBITING VEGETABLES AND FRUITS.

By HERBERT R. KINNEY, Worcester.

This subject is one of such large proportions that I shall not try to cover it in any systematic way, and shall not consider the raising of either vegetables or fruits otherwise than to speak of certain methods and conditions that are likely to give desired results.

Perhaps there never was a time since the existence of horticultural and agricultural societies, when there was greater need of giving this subject careful consideration than at present. In the early agricultural and horticultural exhibitions there were neither so many varieties shown nor so much money distributed, and the exhibitors were more what might be called amateurs than at the present time, and I, for one, am very sorry to see the amateur exhibitor being driven out by the professional. I will admit that I am one of the latter, and fear that I may be obliged to stay in that class, but my sympathies are certainly with the amateur.

It might be well to explain my idea of the amateur and professional exhibitor before going further. I shall consider the professional exhibitor one who exhibits for the dollars there are in it, and the amateur for the satisfaction of exhibiting exceptionally fine specimens and who would under no consideration enter an exhibit unless it showed considerable merit. The true amateur does not object in the least to being beaten, because when he is beaten he can see that there is still a chance for him to improve, and that is the height of his ambition. He is not considering the value of the prize, but rather the perfection of the fruit or vegetable he is growing. Not so with the professional; while he likes to show good specimens, he is ever keeping an eye on the cold cash, and he is willing to have his name on exhibits that he real-

izes are not a credit to him because he knows that he is likely to draw a prize on only common stock, sometimes, and the dollar is what he wants.

I should not wish to have a society discriminate for or against either the amateur or the professional exhibitor, for both are needed to make up a large exhibition and they both get benefit from meeting and from the exhibitions, but it makes it more difficult to run an exhibition satisfactorily than it would be if the exhibitors were either all amateurs or all professionals. I think you will find that the strictly amateur exhibitor is becoming less and less a factor in vegetable and fruit exhibitions every year, and if such is the case, it is certainly time we were giving the subject serious consideration. It is not because the professional grower cannot grow as good specimens, or that he cannot arrange them as well as the amateur, that we should strive to keep the latter with us, but because he is carrying out the ideas of the founders of the horticultural and agricultural societies. If there were no large money prizes there would be no professional exhibitors, and no money prize is really worth any more than the face value of the prize; but if the prize had no money value the competitors might spend any amount to secure it. I am of the belief that every large society should offer some prizes, every year, that have other than a money value. There would be no use in offering such prizes if there be no interest in amateur horticulture, but it seems as though there should be gentlemen in this society who would like to compete for a gold medal, who would not think of trying for a money prize. Do not think that I would advocate substituting medals or silver plate for the money prizes offered at the present time, but if we could have one amateur prize at each of the large exhibitions and have it competed for with the same spirit that some of the cash prizes are, it seems to me it might revive an interest that I fear is fast dying out.

The offering of large money prizes has had a tendency to foster professional exhibitors, not only about the home of the societies offering such prizes, but back in the country as well, and it is a very great benefit often to the country exhibitor to attend the large exhibitions and compare his produce with that from other sections of the state. This makes it very important that these

large exhibitions be run in the very best possible manner, as the country exhibitors are many of them close observers, and when they go home it is very desirable that they carry the idea that the large society is run on broad principles and that the best exhibits get the best prizes. There is nothing so bad for any exhibition as to have the exhibitors feel that there is any partiality shown in the awarding of prizes or that the judges will not give every one an equal chance. It is usually claimed that there will be some kicking anyway, but those who get the prizes will be satisfied. The conscientious exhibitor, however, only wants the prize he deserves, and if he gets more he loses confidence in the integrity or judgment of the judges, and his opinion is very much the same if he does not get what he thinks he should have. The public is equally disappointed if the judging is bad.

Our subject is the growing and exhibiting of vegetables and fruits, and you may ask why I am considering judging. The amateur exhibitor may care very little for the opinion of the judges, but in my opinion he is not a large factor in exhibitions of today. The professional exhibitor spends more thought on what will please the judges at the exhibition where he intends to compete, than on the actual merits of the exhibits he puts on the table.

I prefer a single judge to award prizes, because if one man has to make the decisions he must use due care and have a reason for making them, bnt if there are a number of judges the decisions are usually a compromise, as no two will agree every time if the competition is close, and in such cases you get no one's judgment.

There can be no general rule regarding the proper size of vegetables or fruits for exhibition, but the present custom of exhibiting vegetables of a smaller size than formerly, is a great improvement. This applies particularly to such vegetables as potatoes, beets, carrots, and parsnips, as the tendency of these is to grow too large; but with such as salsify and horseradish, the larger they are (providing they are fairly smooth), the better. To have any of these roots in good condition to exhibit, they should be matured, or nearly so, and to get the plumpness and color which is desirable they should have an abundance of potash. In fact, I think that potatoes, carrots, and parsnips do better if grown on

a good fertilizer. A good coat of manure the season before, seems to do them good. Beets and horseradish will do nicely on heavily manured land. Carrots that are sown late seldom make nice exhibition specimens. They may attain good size, but lack in color and fulness. It is as necessary to have a carrot ripe to be in prime condition for the exhibition table as it is a strawberry. Many would say that to compare it to the Baldwin apple would be much better than to the strawberry, but I think there are few of our vegetables that are in their prime for the exhibition table for a shorter time.

The one vegetable of the rich and the poor that is in use during the whole year and on nearly every table once a day is the potato. It is generally grown by almost every one who has a garden, with the exception of those located near large cities, where the land is very expensive and there is a very large quantity of stable manure used; still it is not shown to perfection as often at it should be at our exhibitions, yet much better now than formerly. The tendency to give the prizes to extra large specimens is not encouraged now, and, as I have intimated before, the exhibitors are after prizes, so if the judges recognize only medium-sized, smooth specimens, those will soon be the kind exhibited. While I say "medium-sized" it will do to go rather above that size if the potatoes are good shaped and show no signs of coarseness, a defect which should never be encouraged. Whatever the size, the skin should be full. To grow potatoes that have all of the good qualities and none of the faults is not always an easy matter, and after they are grown it is often hard to find twelve that are alike, even when the crop is good. One can find two or three that will just suit him, but it is very often necessary to throw these aside and take some that are not so good, as a few extra nice specimens have a tendency to make poorer ones look poorer than they really are. It is probably much easier for any of us to recognize a nice plate of potatoes, than to tell just how to produce them. On general principles, potatoes are smoother and of much better quality when raised on new ground, not necessarily virgin soil, but the first or second year after breaking up, and where the animal manure, if used at all, is plowed well to the bottom and the potatoes are *largely* grown on chemicals or

fertilizers. A good, acid-cut fertilizer I consider best. A liberal amount of nitrogen and potash are essential, and there should be some available phosphoric acid; a combination of 4 to 5 per cent of ammonia, 7 to 8 per cent of available phosphoric acid and 7 to 8 per cent of potash, I think would give better returns generally than one not so evenly balanced. If you know exactly what your land lacks you can, perhaps, make up the deficiency; otherwise it is doubtful economy to try to save money by buying low-grade or poorly balanced fertilizers.

I have raised potatoes of fair quality and smoothness on very heavily manured market-garden land, but they are not a crop that responds to heavy manuring. To grow the best and handsomest potatoes possible, I would use no manure the year the potatoes are planted, but from 1,000 to 2,000 pounds of good fertilizer per acre; about one-half broad cast and one-half in the drill, thoroughly mixed, using large seed cut to two eye pieces, and planted about the first of May in drills from eighteen to twenty-two inches by thirty to forty-two inches apart (the latter distances for the late varieties). Give thorough cultivation and plenty of Paris green and Bordeaux mixture, and you should have potatoes of the best quality.

Perhaps there is no vegetable that is more often exhibited and wrongly judged than celery. Celery, to be good for the table or market, should have a head as much as lettuce or cabbage, and to get this head it is necessary to sacrifice the older leaves; in fact, as you bring the head to perfection you lose all of the outer leaves, but the same is true of lettuce or cabbage, and who would think of giving a prize to lettuce or cabbage because it had a great spread of leaves? It may be possible to sell these great bunches of celery leaves, but I doubt whether there is a dealer inside Faneuil Hall Market who would buy one; they know celery there. It seems to me that every horticultural and agricultural society should try to encourage the people to raise the best of produce, and that we have not always done this in regard to celery. Bunches of what I shall call "celery leaves" may occasionally be picked from among heads of good celery but the methods of growing the two are entirely different. To grow the bunch of celery leaves, the plants must have considerable

room and a long season of growth. They may grow quite rapidly at first, but should continue growing less and less as they near maturity, because a sudden start will cause the heart to develop, the outer leaves to soften, and a head will then begin to form. The older gardeners can well remember when there was a demand for big heads of *celery*, not bunches of celery leaves. I have seen them and have raised some, but do not try to grow them now as they are not wanted in the markets. I would not object to the awarding of prizes to large heads of celery, for it is one of the few vegetables to which size may be considered an advantage, but the point is *size of head*, not of *plant*. I have seen bunches of celery on exhibition which were from six to eight inches in diameter that had practically no heart. It should be the duty of the judges, where such celery is shown, to pick off the outer leaves from one of the heads so that every one can see how utterly worthless it is.

As I have spoken about growing the bunch of celery leaves, perhaps it would be well to say a few words about growing the heads of celery. The method early in the season makes but little difference except in regard to the size of the head. If you would have a shouldered head of nice proportions and not too tall, the plants must be set ten or more inches apart; but if you want nice celery for family use or market, from four to six inches should give a more satisfactory crop. To get celery of the best quality it must be grown rapidly and it is quite important that it should take a little extra start when we begin to blanch it. Celery that is banked with earth gets this start from the cutting of the roots, and the chance that those roots which are left get to work up into the soft earth of the bank. Perhaps the best way to start Golden celery that is to be boarded, is to give a good watering and work the ground about the time the boards are set up. This gives celery of fair quality; but no method will give as good celery in the early fall as can be produced later when the weather becomes cooler. Celery grown in this way will not keep so well as that of poorer quality.

There is one more point in the exhibition of vegetables to which I wish to call your attention, and that is, the danger of losing our type or of recognizing varieties that have no type of

their own. At the present time when every seedsman has to have something new almost every year, if you consider how many there are in the seed business you will see that our so-called *varieties* multiply rapidly, and while some of these may be entirely new a very large part of them are practically like some varieties that are already in cultivation. These exhibitions are supposed to be run to educate the exhibitors and the public, but if they are to be of any use in that line, the judges must see that exhibitors hold strictly to the type of the variety they exhibit. Exhibitors will often say that "I bought the seed for such a variety," and think that should be sufficient. While that may be all they can know about them at first, the judges should satisfy themselves about the type, and then stick to it. To illustrate this I will mention the tomato, of which there are a great many varieties of the same color, but with several distinct types.

I think that in the fruit exhibitions we find rather more of the amateur spirit than in the vegetable department, but the professional is here also, and is usually able to secure his full share of the prizes. In the vegetable exhibition as a rule we cannot consider size of specimens a very important factor, but with fruit it is different, as there seems to be no objection to large size in any of our fruits, provided that they have color and smoothness, and for that reason we may consider size of very considerable importance in fruit of all varieties for the exhibition table, but there are other things that must be considered. All dessert fruits, to be of value for market or attractive for home use, must be handsome in color and form. Cooking fruit, to be of the best quality, must be fair and fine-grained. So we have several things other than size to consider in the fruit exhibits, and I think it important that the judges of fruit at our larger exhibitions should try to encourage the growing of fruit of the best quality as well as of largest size; for instance, a very large apple of poor color and quality is of but little value, and a small strawberry of fine color and quality is equally undesirable, from a commercial point, at least, so we should consider that size and color must go together to make a perfect fruit.

Very many varieties of fruit are shown, especially at our agricultural fairs, long before they should be ripe, and there is an

endeavor to get a color similar to what the fruit should have when ripe, but this is all wrong, because we do not want Baldwin apples ready for the table in September, or Northern Spy in October.

Judges who consider color the most important quality of fruit, are likely to do more for the good of the fruit interests than those who consider size of the first importance; but the ideal fruit is one of good size and good color.

There is a difference of opinion among fruit judges in regard to imperfections. Some claim that a plate of fruit is no better than the poorest specimen, and they will often throw out a plate because of a defect in a single specimen, when those remaining are very much better than any other whole plate. Other judges claim that if the eleven are better than any other twelve, then they should have the prize. For my own part, I believe the latter are right, because it is the growing of the fruit we wish particularly to encourage. The nearer alike all specimens on a plate of fruit are, the better, but we must not let any of these technical points divert us from the objects of the societies, which were not organized to make professional exhibitors, but to encourage the growing of better produce. It may seem that I am giving too much attention to this part of the exhibition, but it is one that we should keep constantly in mind.

While size and color are in general the two most important qualities in the fruit exhibition, when we consider the peach, we should use a great deal of care, or we may encourage the exhibition of the product of disease. Perhaps there is no other fruit that is increased in size and color, as is the peach, by disease. It has been so that there was no use in showing sound peaches at some exhibitions, as the prizes were all given to prematurely ripened fruit. I have seen prizes for Early and Late Crawfords given to peaches between which one could hardly tell the difference. It is not uncommon to see the prizes given to ripe Elbertas and Crosbys early in September, when the sound fruit shows no signs of ripening. These displays of diseased peaches may take better with the public and are certainly more of an attraction than good sound fruit, but I believe they are against the promotion of horticulture.

Mr. Kinney, in the course of his lecture, exhibited a root of

celery showing the crisp heart and worthless, because tough and fibrous, outside stalks. He also exhibited an ideal Baldwin apple, which showed red in September and has since brightened. He said that we must consider size, whether we go above or below the normal. The smaller specimens are usually brighter in color and finer in grain than the larger.

Discussion.

Hon. James J. H. Gregory said that he had listened to the lecture with great interest and profit. There is a class between the amateur and professional,—the farmer, who exhibits partly for honor and partly for money. Mr. Gregory said that he is perhaps the largest exhibitor in Essex County, and he is convinced that there is no money in exhibiting vegetables. He never got more than dollar for dollar by exhibiting. There has to be a great outlay of time in selecting a dozen specimens of the same size. In this Society there is a varying standard. Weight and size are too much the standard here; quality should be the standard. We would not buy the squashes and onions which take a prize here for our own use. Prizes for squashes are often taken by specimens which are not ripe. If drawn in where the stem is joined, the squash is ripe. Hubbard squashes weighing seven or eight pounds used to take prizes which are now awarded to overgrown specimens that are worthless, and the societies are responsible for it.

He would depend largely on potash rather than on barnyard manure. If potatoes are thin you can plump them by giving them potash. He would give as much as ten per cent.

Thomas Harrison said that a potato thick in the middle is hard to cook. The shape of the potato is of importance. One long, and even all the way through is more easily cooked. He prefers the flat varieties.

The lecturer said that any potato wants to be as thick as the variety calls for or you get a poor potato. Some potatoes are naturally thick like the Hebron.

Hon. Aaron Low did not agree with Mr. Gregory as to the awards. The Committee have made the rule that onions, for instance, should correspond to the ideal of the variety shown. When

there have been large displays of foreign onions they have always given preference to the Danvers.

Varnum Frost thought Mr. Gregory a little wrong in what he said about squashes. He knows a ripe squash as well as Mr. Gregory. He used to tell one by sticking a knife in; now he strikes it with a stick. He says there is no money in getting up a collection,—it takes too long to find specimens alike.

The lecturer thought that low ground that is strong, so that it will not wash away or blow away, is good for apples.

Mr. Frost said it is a simple matter to grow strawberries. Nine-tenths of farming may be learned from observation. Prizes should be awarded for the largest and handsomest strawberries. The Marshall is the best of all. Many people are disappointed in the Marshall because they do not know how to grow it. It will not do to set the Marshall on land that is sour. It must not be set on land that settles and will be hard. The rows should be four feet apart and the plants eighteen inches apart in the row. The plants should be elevated two or three inches above the level of the row. Set the plants in August; if as late as the middle of August, let no runners grow. Avoid walking near the plants. Clay is needed if you wish to get the largest berries.

Samuel H. Warren said there are but few localities where the Marshall will grow well. There are many kinds nearly as good as the Marshall of which you can get ten quarts to one of the Marshall. The Ridgway, originated in Indiana, is one of the best for the home garden. It will give three times as many berries as the Marshall. It is not quite so large and the color is not so good, but it is a splendid strawberry and you can rely on it. The Sample is very handsome and very productive, but it lacks quality.

Mr. Frost said every plant should have a hundred square inches. He finds no variety that will yield as many berries as the Marshall. If they do not yield well it is because people do not know how to grow them. He knew of a man in Lincoln who had a bed of strawberries planted so close that the sunlight and air could not get in. The bed was so handsome that he called his neighbors to see it, but he did not raise a berry.

Mr. Low thought there is no fruit of which you want to know

so much as the strawberry. If you have a clay soil the Marshall is the ideal berry. Some varieties need a sandy soil. Thirty or forty years ago the Hovey's Seedling was the ideal berry. You must know what kind of land you have got and plant varieties that will grow on that land.

Mr. Gregory said that Russet apples are most successful on land with a large proportion of clay.

The lecturer would use no manure on grapes. Bone is better, but it acts slowly. The wood should ripen early. In the ideal vine the joints are short. If your ground is rich, mulch it with hay rather than manure. The secret of growing grapes is to get good wood. He uses bone and ashes and some sulphate of potash.

Mr. Harrison had spread lime and wood ashes over leaves on the ground.

The lecturer said that to grow the best quality of apples he should not work his orchard at all. It is practically impossible to get very large fruit from land that is not worked, but the quality is better. Apples are not as firm or as high colored in cultivated ground as in pasturing. He advised a man in Newbury who had had no apples from his orchard for three years with clean culture to lay it down to grass, seeding thinly. There is no way to keep grass out of the orchard so well as by cows. It is well to work a young orchard until the trees get to bear a barrel or two. He would not have a limb so low that a cow could reach it. The fruit is not so good from a tree branching low. Train up high and let the limbs hang down. As trees begin to bear the ends of the limbs die off. He would make a new tree by pruning. If a tree is growing fast a large wound will grow over quickly. You want new, bright wood. Apply no fertilizer under the trees. The place to apply it is in the centre of the rows. The speaker was convinced that trees should be scraped and then painted over with Bordeaux mixture. There are many insects under the scales but he would not cut into the live bark.

Mr. Gregory said he had an orchard which bore little fruit. He scraped the trees and they bore better the next year. Baldwins from uncultivated ground keep better than those from tilled land.

A vote of thanks was unanimously passed for the lecture.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 16, 1901.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE ADVANCEMENT OF MARKET GARDENING IN THE PAST TWENTY-FIVE YEARS.

By MICHAEL SULLIVAN, Revere.

The question is often asked, what is market gardening? We find the kitchen garden, originally devoted to the cultivation of culinary vegetables for private use, enlarged so as to admit a commercial side, and a continuous enlargement caused by demand of local and surrounding communities.

The kitchen farmer or gardener has moved up a degree to the commercial or market gardener.

Horticulture, the twin brother of market gardening, on account of its close relations and the use of the greenhouse and hotbed in forcing crops, and the propagation of plants by each, can well be classed with market gardening as one and the same business. There is a difference between this and agriculture, owing to the small area of land required in the operations of one and the large area required by the other. The manner of cultivation, and large variety of crops produced well make a distinction.

The business of market gardening in the neighborhood of all cities increases always on a scale proportionate to the greatness and wealth of the city, and its progress and development will depend much upon the demand for the crops which can be produced profitably in the vicinity of those cities. Boston and surrounding cities have long been noted as having the most exacting markets in the United States as to the quality and neatness displayed in the preparation of all fruits and vegetables offered for sale.

The result of this continuous demand for the best, and the good prices generally to be obtained, have been the cause of son succeeding father in the line of producer, generation after generation;

and this going on since the early settling of the country, has resulted in as high an order of intelligence as can be found anywhere in the world where market gardening or horticulture is carried on. They have been the founders of this grand Massachusetts Horticultural Society, whose good work is spreading throughout this great country, their great Boston market speaking at all times for the quality of their good work.

The changes and progress constantly going on in all lines of human effort are to the ordinary mind at times almost incomprehensible; that in the space of one life of average duration, one can see those great changes and improvements may well be called a Divine favor.

Along with all other lines of human work, that of the agriculturist has kept pace, and has advanced wherever science and scientific knowledge have availed. The agriculture of fifty years ago, whether on the farm or in the market garden of those days, seems as remote and ancient in comparison with modern methods as would the workshop of the manufacturer or the machine shop of the most skilled mechanic of those times. Still old Mother Earth, the foundation of all wealth, remains the same.

The tillage of the soil and preparation for the seeds are not the only improvements; the hand of science has come to the aid of the agriculturist, and whether applied on the farm or the market garden, this aid has been of material advantage.

Who but the practical engineer and scientist could explain the advantages of underdraining the soil, transforming thereby what was before a waste into a productive and fertile field; who but he, could so well explain that by underdraining, the wet and soggy soil could be made warm and productive, so that the full benefit of the manure which might be applied could be made available. And so on, step by step, the scientist directs the practical hand of the farmer and market gardener, changing the old time farmer himself into the practical and scientific market gardener of today. Every day on every hand we are told that we are living in an age of progress.

In looking backward a quarter of a century, with all its changes, time seems short in comparison with the twenty-five years yet to come, and now, in the very beginning of the first quarter of the twentieth century, there can be no doubt but the advanced intelli-

gence and the high education of both men and women, must largely exceed that of the past quarter century.

The advancement and development of market gardening in the past twenty-five years is a subject well worthy of a pen more able than mine. However, thirty years and more of continuous labor in any line should leave one master of his business.

The market garden, more than any line of agriculture, should be worked on strictly scientific principles; that is, exact knowledge of the requirements of all the crops under cultivation, whether in the open field or under glass.

A close study should be made first of location and approaches thereto; then soil —its composition, both of surface and subsoil, and perhaps climatic changes caused by location, for it may be near the ocean, and therefore have less snow to contend with — or inland, with its late and early frosts, and heavy and destructive showers in the growing season. Along all these lines science now comes to the aid of the intelligent market gardener.

Books on market gardening written and published at the beginning of the past quarter of a century, classed at that time as "standard works on American gardening," plainly show its advancement and development, when compared with the standard works written and published today. While there were to be had excellent standard works on agriculture and plain farming, very little of value could be found on the subject of market gardening.

"The Field and Garden Vegetables of America," by Fearing Burr, Jr., was published in 1865. "Market Gardening for Profit," by Peter Henderson, 1866, was the first and most valuable practical work published, which was then available to the American market gardener. This book, more than any other published in this country, opened up the entire field of commercial gardening. What were considered "trade secrets" before its publication, were made available to all, and the enlargement and spreading out of the market gardening business all over the country can well be dated from this publication. Here, in a condensed form, is printed information as to those who are best fitted for the business, the monthly calendar giving directions to guide the practical gardener throughout the year.

The time has long since gone by when the average farmer or

market gardener took the view once credited to him, that information obtained from books was of no value. The agriculturist and market gardener require the best books for their study as well as the architect or mechanical engineer, for in either case the books are an essential part of the tools to work with. Today books are to be had on almost every conceivable subject in agriculture and the growing of special crops. What was once guarded as a trade secret is now found written in books, magazines, and the agricultural newspapers. Therefore I shall leave out all detail in this paper as to the growing of crops or the preparation of the soil, only referring in a general way to the great changes so rapidly taking place.

Again referring to the most advanced work published in 1866, how ancient and primitive seem the greenhouse and forcing pit of that time compared with those of today. But it can well be said, the instructions were all there, and the foundation for the large operations now going on in all parts of the country, was then outlined in this little book.

The valuable publications of the Hatch Experiment station, at Amherst, and the equally valuable publications of this Horticultural Society, together with many others that might be mentioned, present to the gardener of today unlimited sources of information.

Certain locations in our State are noted as leading in special lines of work and invention. Lynn for its shoe manufactures; Lowell for its cotton mills; and so Arlington and Belmont can well be called the leading centre of new and progressive ideas in market gardening. In order to verify this, look at the magnitude of their greenhouses and well tilled gardens. By the use of those immense glass structures, some of them six hundred feet long by fifty feet wide, the field operations are continued, enclosing smaller fields for the winter growth of vegetables.

To such assured success has this attained, that one of the largest growers has said that he was as yet undecided as to which was the cheapest, whether he could not grow the highest quality of vegetables as cheaply under glass as in the open field. This, when understood, may yet come to pass, for at this date a process for cleansing the soil, called sterilizing, is known which will make it possible.

Here again has science come to the aid of the horticulturist and market gardener. The Experiment Stations are entitled to due credit for this already assured success, made so by the larger appliances and conveniences of the scientific market gardener, who has already applied this method in the successful growing of immense quantities of lettuce.

Upon further experience it may be found that by sterilization of the soil, perhaps the entire list of fungus diseases can be easily controlled or wiped out; also the expensive fumigation of greenhouses may be rendered unnecessary.

Two years' experience has as yet but partially demonstrated its full value to the market gardener; already a patent machine for soil sterilization is on the market, which indicates that it is somewhat beyond the experimental stage. Those who are carefully studying results, are already able to say that they think this discovery one of the best and most valuable of recent date.

A process of sun sterilization may yet cheapen and simplify this valuable discovery. From the management and care of the old time hotbeds of twenty-five or thirty years ago, consisting of only a few three by six foot hotbed sashes in many of the best market gardens, has sprung the care and management of the immense greenhouses now so successfully worked, just as from the old time cobbler's shops at Lynn, have come the great shoe manufactories, and the care and management of all their fine and complicated machinery.

It is nothing strange now to find the products of Massachusetts greenhouses on the banquet tables of Chicago and all the other leading cities of the United States.

Cucumbers, once considered so difficult to grow in winter, and as yet so expensive, are now produced at all seasons, and the markets are kept well supplied throughout the winter. In growing this crop, staminating the blossom, which is done by the bees in spring and summer and considered absolutely necessary for success, can now be done by artificial means. Twenty-five years ago only a limited knowledge was had as to its requirements. This applies to nearly all the garden fruits and vegetables, and is fairly understood at the present time.

The Boston Market Gardeners' Association, of which I am

pleased to be a member, was organized in 1886, and was the first in that line in the United States. W. W. Rawson, who was elected its first President, is still holding that position, and has shown himself one of the most able, advanced, and progressive market gardeners engaged in the business. The benefit resulting from this organization, now of fourteen years standing, is of much importance. Valuable lectures are given by the best professional ability from the various agricultural colleges; also papers are read by the different members, treating on special crops in the cultivation of which they might well be classed as experts, the presentation and reading of which before one of the most experienced and enlightened bodies of men engaged both in agriculture and horticulture in the United States, creates discussions of value to members and all those present. Its members are largely members of this Horticultural Society, and are working mutually for the benefit of both.

Other States are now copying them, and similar associations will result throughout the country in or near the large business centres.

While the business of market gardening is not what it once was, neither is any other business; still it may be said that there are but few lines of business contending now with the competition from outside and which did not exist twenty-five years ago. California, the great West, and the sunny South, are now getting the cream of prices by their early, and with us, unseasonable, productions, now that transportation is so cheap over the great lines both by land and water, daily and weekly connecting distant sections of this great country, constantly supplying their best fruits and vegetables to our market. All this tends to discourage many, and only the courageous capitalist, who can afford to purchase modern appliances, is now making any profit.

Market gardening has laid the foundation of many a fortune in years past, and a good living and a comfortable country home still await those who will fulfill its hard and exacting requirements, and who wish to till the soil.

There can be no question that there has been great improvement in the modern appliances for irrigation of the field crops and the greenhouse, requiring the expenditure and outlay of large

sums of money; also in the use of insecticides and poisons for the spraying of fruits of the orchards and field and garden crops, producing results in quality as well as in quantity which without them could not be obtained.

The proper use and value of the commercial fertilizer for farm and market garden crops is now well and carefully studied, and the guesswork of twenty-five years ago as to their application is no longer needed by the intelligent farmer or market gardener, and he is able to place a more just value on stable manure, that always reliable and best of all fertilizers.

But all these advancements have brought their burdens also, in the shape of increased taxes. The near-by market gardeners are now suffering from burdensome and often unjust taxation. Situated within the rapidly growing towns, and near large cities, they are compelled to carry their proportionate part of the expensive improvements in the central portions of those towns, often receiving but little or no direct benefit therefrom.

The solution of this problem can only be found in the gradual absorption and cutting up into house lots, of those farms, thereby compelling those continuing in this line of business, to move back where lands are to be had cheaper, and where therefore taxation is lower. It is the opinion now of many, that this condition should be adjusted, even by legislation if necessary, so as to give encouragement to those who are continuously doing so much for the advancement of agriculture.

That New England has led and will still continue to lead in all the new lines in agricultural development, in improved methods in market gardening and horticulture, is now plainly evident. This year, 1901, the first of the new century, Boston, ever progressive, still in the lead, will open to the public her new and grand Horticultural Hall, the finest in this country if not in the world, where the coming generations can continue the famous exhibitions which have been given here in this old hall, with all its pleasant associations in the past, and which have given pleasure as well as instruction to thousands; where the work of exhibiting the productions of the market gardener as well as the choice and equally skillful work of the horticulturist, having ample room each and all for the exhibition of every kind, can still go on—Boston, the home

of education, with always new and advancing ideas, her best men continuously studying out, always for the greatest public good, not alone in her grand buildings for State Capitol and Municipal uses, but also for Music and the Drama, as well as Horticulture.

Quincy Market, the grand conception of the elder Mayor Quincy, built under his direction and providing standing room for the farmers' produce wagons on South Market Street, was once the best market in any city in the United States. But the Quincy and Fanueil Hall Markets, once ample, are now fast becoming insufficient, owing to the very rapid increase of population and business, requiring for both buildings and surroundings a much larger area than is now within the market limits.

Boston ought to do something for those worthy tillers of the soil, who do so much in constantly supplying fresh and healthy produce for its inhabitants. Quincy Market should be extended to Atlantic Avenue, and a covered shelter stand should be provided for the market gardener and farmer; such an enlargement would do credit to the City of Boston, which should retain full control and ownership of the whole. The contemplated cutting of a street through Quincy Market, thus lessening the farmer's limited privileges on South Market Street, should not be allowed.

Why should Boston overlook and neglect her Market, always in the past considered of so much importance? That the advancement of market gardening may be encouraged within this grand old Commonwealth of Massachusetts, is the hope and desire of those engaged in this most worthy occupation, that they may do their State credit in the future as they have done in the past.

In our day the people of wealth who daily go in their carriages to Quincy Market to order their table supplies of fruits and vegetables, the man of moderate means, and the poor man who takes his basket to the market, can all buy, according to their means, the luxuries of the season as well as the necessaries of life, there so temptingly displayed; and all this is the handiwork of the market gardener and modern farmer. Full credit should be awarded to them for the bountiful table which the poor man can so cheaply furnish at the present day.

The taste for many kinds of vegetables, when first introduced

into our markets, is largely an acquired taste, so that their growing is unprofitable to the market gardener, and therefore the production for many years, remains limited until the daily demand increases and a good market is secured.

The Tomato, for instance, required years before it found its place as a popular vegetable for general use, while today tons of this excellent and healthful vegetable are sold in every market throughout the country.

The abundant production and large market supply in its season of the appetizing Celery, once so limited in supply in our market that only the wealthy could afford to purchase, bring it within the reach of all, and this excellent table vegetable can now be purchased cheaply everywhere and may be well called a boon to the city dwellers and to humanity.

The abundant supply of Asparagus also, in its season, supplemented by early supplies from the South, can be appreciated and is by those who know its value as a food as well as for its medicinal properties.

The early spring market once so profitable to the skilled Boston market gardener, now no longer exists, except for those gardeners who, with their greenhouse and hotbed products, can compete with the South. The Southern and California fruits and vegetables are now supplied to our markets in overflowing quantities, and hereafter the competition from all outside sources will tend still further to diminish the encouragement for local production. However, the climate and favored locations of soil and situation, nearness to market, etc., will always remain factors to encourage those wishing to continue in market gardening and fruit growing here in Massachusetts.

Discussion.

Hon. J. J. H. Gregory thought the meeting much indebted to the lecturer for the broad and sensible handling which he had given his subject. About sixty years ago he and his brother sold in his native town, Marblehead, the first tomatoes. They brought, green, three cents a pound. There was then only one kind. At that time the only beet besides the Long Blood was the Turnip Blood; the Bassano was introduced soon afterwards.

There were Tory Beans, Bush Beans, China, then sometimes called the Skunk Beans, and the Sieva or Small Lima. Sweet Corn was hardly known; it was then called French Corn; the first variety introduced was the Darling. It came into use rather slowly. The only carrot was the Long Orange, and the only cucumber the Frame. The only cabbages were the old English Drumhead and the Long Stemmed Savoy. Of potatoes there were the Early Hill and the Long Red. Onions were then for the most part sold in traces; the Strasburg was the yellow variety, and all our other varieties of yellow, of which the Danvers was one, were bred from it. There were only hard yellow peas; the wrinkled sorts were not known. Fairbeard's Champion of England was one of the first and still remains one of our best. The only dandelions seen in the markets were wild ones, dug in the fields. The only melons were soft, yellow, oval "mushmelons." The Crookneck was then about the only squash; the Marrow was introduced by John M. Ives at about the time Mr. Gregory was speaking of. The true original variety is now lost, but if we could find out where they came from we might renew them; probably they were from Brazil. The true Hubbard has no soft shell; they begin ripening near the stem and the shell hardens.

Varnum Frost said that much stress had been laid on modern science, but we get no good squashes now. The barrel boxes which are filled with two or three dozen heads of lettuce are one-half salt hay. He used to pack cauliflowers solid; now eight cauliflowers carry three times their weight in lumber and rubbish, and loads are piled ten feet high that might be carried in a light wagon. Is the quality of vegetables as good as it was fifty years ago? It is nonsense to say that farming cannot be learned by observation.

The lecturer said that market gardeners in Arlington and Belmont had been stuffing their soil so full of manure that the quality of the vegetables raised on it had deteriorated. The quality cannot be expected to be what it was on virgin soil thirty years ago or more. He thought it might be well for a market gardener to lay down one-half of his ground to grass alternately to rejuvenate it.

Joshua C. Stone said that in what had been said by the speakers who preceded him there was not one word of encouragement to

young men to go to farming. A man makes a profit of five thousand dollars a year of receipts over expenses, but he has a hundred thousand dollars invested in his plant, and makes no account of interest. The speaker had been in the business forty years and has four sons, not one of whom would take the farm if he would give it to him. He can grow cucumbers every week in the year, but no man can grow them at a profit to be fit for use before this time. Greenhouses are no profit to any man in connection with a market farm, but a man who gives his whole attention to them might do something. No man can get a living on land worth two thousand dollars an acre.

Warren W. Rawson thought that the lecturer had covered the ground well without going into details. The speaker could go back forty years and could remember when two hundred hotbed sashes was a large number for one market gardener to have. Today two thousand is not a large number for one grower, and this besides several acres of greenhouses. Six dozen heads of lettuce would then go in a barrel box; now two or three dozen will fill it. The speaker is not discouraged at low prices, for the market has greatly extended, and the productions of Boston market gardeners go as far as Chicago and Canada. He had never known a year when cucumbers did not bring twenty dollars per hundred in February, and he has sold them for fifty dollars per hundred. Lettuce has brought two dollars and a half per dozen. The telegraphic advice today was to ship light, for there were large quantities from the south. The speaker thought we can grow vegetables here as cheaply as at the south. Nothing is so important as sterilization of the soil; a machine has been invented for the purpose, and the speaker thought it would rid the soil of insects and save fumigation.

Mr. Rawson thought that sterilization would destroy many insects. Since he practised it he had seen very few green flies.

The lecturer said that in the paper which he had read he had touched on the inducement to the younger generation to engage in market gardening, for there is a living still remaining to the business. It will not produce millionaires, but it has laid the foundation of fortunes, though this was largely from the rise in the value of land; but this applies only to the vicinity of Boston

and other cities. If he had his life to live over again he knew of no position in the community more independent than that of the market gardener.

Mr. Frost said that there is four times the amount invested in market gardening in Arlington that there was forty years ago, but it does not put so much money into the farmers' pockets. Any man can bring up a family and lay up two thousand dollars a year if his father leaves him a hundred thousand dollars.

The lecturer said that thirty-five or forty years ago, in war times, the market gardeners' wagons were met at the ferry by the market men with the cry, "Sell it to me, sell it to me!" and the gardener made his own prices. Then was the time when the farmer had a large bank account and paid off his mortgage. Prices were almost fabulous; tomatoes brought two dollars per bushel by the wagon load, and all other farm produce brought proportionate prices.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 23, 1901.

A Meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

A QUARTER CENTURY'S EVOLUTION IN AMERICAN HORTICULTURE.

By PATRICK O'MARA, New York, N. Y.

The phenomenal progress made in horticulture during the past few years may well supply a theme for the essayist, provide food for thought to those engaged in its development and prove an interesting study for those even remotely connected with it. While horticulture generally has made great strides forward, the most pronounced progress has been in floriculture, particularly in the growing of cut flowers to supply the great cities during the winter season. It is in this particular branch of floriculture that American horticulture can justly claim precedence over all others and

although the scope of this paper is not limited to that alone, a review of it will form the principal part. So pronounced is the advance in greenhouse construction, in methods of growing, in business methods, in the varieties of roses, carnations, chrysanthemums, geraniums, cannas, and other flowering plants, that the progress made may well be termed evolution. Coincident with the advance made in growing, and equally pronounced, is the great change in the retail stores; in fact much of the change in the growing must be credited to the enterprise of the retailer. This is somewhat debatable ground but it is not vitally important; the great point is that progress has been of a necessity coincident.

My first actual contact with the great New York cut flower market took place in the winter of 1874–'75, when I was sent as an assistant to my elder brother to carry an extra basket, occasionally, in his wake, and sometimes go off on an independent route to sell. It seems incredible, in these days, that one man carrying flowers in a basket, with a boy to help on very busy days, and the use of a horse and wagon at Christmas and New Year's, would dispose of about $35,000.00 worth of flowers annually, but such is the fact. The horse and wagon at the times mentioned were necessary largely because of the increased bulk of Poinsettia, which was a "pièce de résistance" in those days, and which, by the way, is just coming back into fashion again. A large basket, such as was in general use to carry cut flowers then would hold an amazing lot of flowers and the prices were gilt edged, $20.00 to $25.00 per hundred for Le Pactole, Lamarque, Safrano, Isabella Sprunt and Bon Silène roses, and even $30.00 per hundred for Douglas. Small roses like these, cut with stems about a foot long in the extreme, did not take up much room; carnations picked short and a few perhaps on stems about six inches long; double white Primula picked short; *Stevia compacta*, Bouvardias, Abutilons, bunches of Heliotrope, *Chorizema varium*, *Lilium candidum*, *Euphorbia Jacquiniæflora*, Tuberoses, Lily of the Valley, Eupatorium, Allamanda, Begonias, Dutch bulb stock, *Jasminum grandiflorum*, Callas, Violets, Sweet Alyssum, Mignonette, *Clerodendron Balfouri*, *Eucharis Amazonica*, leaves of *Cissus discolor*, Smilax, leaves of Pelargonium Madame Pollock, Rose Geranium leaves, fern fronds — anything and everything in the

shape of flowers and foliage could be sold in the early part of the last quarter century. It required considerable diplomacy and tact on the part of the seller during the busy season to steer clear of the too prying buyer in the stores. The various flowers would be done up in separate packages, some reserved for particular customers. The camellia was still in the market when I first began, but was rapidly passing away and shortly after disappeared absolutely. It is interesting to note that camellias were very much in evidence among the flowers used at the funeral of the late Queen of England and that there is every evidence of a revival in them. Thus do fashions change, and the favorite of today may be the despised outcast of tomorrow. The double white Primula was a staple at the time of which I speak and was largely used in funeral designs. We grew a house of it one hundred feet long and found it very profitable. Tuberoses were a staple, too, and one of the best paying crops. We would realize a thousand dollars and over from a house one hundred feet long and ten feet wide, besides raising a spring crop of bedding plants on the same space. In these days of fifty cents per square foot per annum, the wonder is that more florists did not get rich in those halcyon days. One of the local florists on Jersey City Heights made a specialty of tuberoses and amassed a competence from it while the "boom" lasted. These were still the days of the stiff table design, flat basket, hand bouquets made with flowers wired on broom corn, little boutonnières made up with a green leaf for a background and anything handy. Orchids, with the exception of *Cypripedium insigne*, *Dendrobium nobile*, *Bletia Tankervillee* (or *Phaius grandifolius*), *Peristeria elata* and Zygopetalum were practically unknown, and only a few of these found their way to market, mainly from private collections. The glorious Cattleya had not yet made its appearance. There is a well authenticated story of its first appearance in a Broadway, New York, flower store. A noted beau who called in every morning for his boutonnière was always looking for something new. The proprietor had obtained a Cattleya flower and had it safely stored in the ice box awaiting his appearance. He came. Reverently the flower was placed in his buttonhole; silently he was turned toward the mirror. There was an air of mystery, the play of an artist, about the whole performance and

then, the climax, $25.00 for the flower, which was paid with alacrity. It is further stated that for many days thereafter the same gentleman called regularly as usual for his orchid, but the price had dropped to $15.00. No wonder that some of our millionaires decided to go into the business of raising them. It is difficult to get statistics on cut flowers which are reliable, but from the best information obtainable I feel safe in saying that the value of orchid flowers sold annually in the New York market for several years past will not fall short of $100,000.00. This is only one of the many features in the evolution of floriculture.

It was about 1875 that the first decided ground swell in the coming evolution in floriculture was felt, and although it did not manifest itself forcibly for several years thereafter yet it is comparatively easy to trace at this time. All eyes were being turned toward the rose. The varieties then being grown were far from satisfactory; larger flowers and a better grade were demanded, and the supply was forthcoming. Better greenhouse structures were needed and these too were soon supplied. Madison, N. J., began to assert itself. The growers there began sending in Cornelia Cook, and a great revelation it was! Gen. Jacqueminot was artificially rested and forced into flower, the buds bringing from $1.00 to $2.00 each. William Francis Bennett and Pierre Guillot were tried in an effort to provide the desired red rose in winter and failed. Duchess of Edinburgh received a limited trial, but was found wanting. Souvenir de Wootton made its appearance and held its own until the growers got to understand the needs of Meteor, which has since held the field until challenged by Liberty, to which it has not yet relinquished it. Souvenir d'un Ami held place for a time, under an alias at first, but was unable to hold its place against the grand Catherine Mermet, and the day came when her fair daughter, Bridesmaid, drove the parent from the market. The Bride, another daughter of Mermet, quickly drove Cornelia Cook and Niphetos into obscurity. Perle des Jardins eclipsed Maréchal Neil, and Sunset, daughter of Perle, had her day only to retire into obscurity even before the parent. About 1885 the great forcing rose of that and the present day was ushered in as American Beauty, a seedling it was alleged discovered in the gardens of Hon. George Bancroft at Washington, D. C. A

very pretty story, and true as far as the introducer knew at the time, but since identified as Mme. Ferdinand Jamain, introduced by Lédéchaux ten years before. This grand rose has surpassed the most sanguine predictions of the prophets, and up to the present time is without a rival. One daughter, — American Belle — has passed to the "great beyond," but another and fairer daughter has made her debut, viz.: Queen of Edgely; whether she can move in the same orbit has yet to be determined. Mme. Hoste, Mme. Cusin, Mrs. J. Pierpont Morgan, Mrs. W. C. Whitney, Belle Siebrecht, Mme. Caroline Testout, La France, Souvenir du President Carnot, each have had their day; some of them are having it still, but a comparatively small day it is. Kaiserin Augusta Victoria is one of the varieties which has come to stay. Papa Gontier, from which Mr. John Henderson reaped a goodly harvest, has gone too. Golden Gate, for a long time in undeserved obscurity, has emerged into the effulgence of what seems a passing day. Mme. de Watteville, Mme. Pierre Guillot, Mme. Capucine, Duchess of Albany, Puritan, and Waban, from which much was expected, file past in our memories; some are fair ghosts of vanished expectations. I beg to digress for a moment to observe that I have not attempted any exact chronology in the appearance of these varieties, deeming it needless. It appears worthy of note here that as a rule the varieties most loudly heralded when they first made their appearance have not held the field with those which modestly entered the arena. The reaction from over-praise, or the result of over-propagation may be the cause. The demand for larger roses already mentioned resulted in the forcing of Hybrid Remontants besides the Gen. Jacqueminot, and for a while we had quantities of Ulrich Brunner, Mrs. John Laing, Baroness Rothschild, Rodocanachi and others. One New York grower for several years sent in Heinrich Schultheis under an alias with profit to himself. Anna de Diesbach held sway for a time as Gloire de Paris. The old adage that "there are tricks in every trade but ours" holds good even with horticulturists. It is somewhat remarkable that, of all the varieties of roses tried for forcing, the great trio remaining are distinctly American, — The Bride, Bridesmaid, and American Beauty. We should not be asked to relinquish all claim to the latter; at all events it was discovered

here. As Columbus could not create a continent he did the next best thing,—discovered one. At this date it would seem useless to set up the claim that it might have been a seedling after all; certain it is that nowhere under the sun are such American Beauty roses produced as in this country. The Dinsmore rose was a seedling beyond all question, raised by Wainwright of Trenton, N. J., yet it is practically identical with Madame Charles Wood. The Trask Grape is identical with Brighton, yet both were seedlings raised hundreds of miles apart; the former was raised first and never got upon the market, while the latter was introduced and brought some deserved fame to its raiser.

Next in importance to the rose as a cut flower comes the carnation. The development in this has been even more marvellous than in the rose. Statistics in cut flowers, as before observed, are very unreliable. Mr. John Thorpe, at the first meeting of the Society of American Florists in 1885, stated that the number of roses then produced for cut flowers in the United States was 24,000,000 and of carnations 120,000,000, to which should be added 6,000,000 roses and 30,000,000 carnations grown in private greenhouses; these, of course, were actually competing with the commercial output. Miss Emily Louise Taplin made a similar statement in 1886, probably borrowed from Mr. Thorpe. Professor Galloway in the "Year Book of the Department of Agriculture" for 1899 estimated the number of flowers sold as follows; roses, 100,000,000, carnations, 100,000,000, to which add 25 per cent for the quantity grown in private places. Here is a wide discrepancy and it is introduced here merely to show that it is such. Probably a figure midway between the two would be nearer the truth. Miss Taplin, in the statement above referred to, estimated that the total glass area in the United States was 3,200,000 square feet, an estimate out of all proportion to the alleged product. Professor Galloway in 1899 estimates the amount at 24,500,000 square feet, averaging 2,500 square feet to each florist. I think this average could be reasonably increased to 3,000 square feet, to include cold frames and hotbeds, which would bring the total up to 30,000,000 square feet in commercial use for the production of flowers and flowering plants, some portion no doubt being used for vegetables. Add to this the vast

amount of glass used by market gardeners and private gardeners, at least 50 per cent of the foregoing area, and we have a fairly accurate idea of the importance of horticulture at the present day in the United States.

But to return to the carnation. The growing demand for the flowers, the evident need for a better grade, and the apparent necessity of "booming" the flower were causes that led to the formation of the American Carnation Society in 1891. This organization has been wonderfully successful along its chosen lines, and the aims originally outlined are being realized each year. The much quoted "Thorpe's Ideal" carnation, viz.: one four inches in diameter on a two foot stem, is not so far away. The development of the carnation in this country is distinctively American. The varieties in use have been raised here, the methods of culture have been perfected here. From Hinsdale to Prosperity; from Portia to America, G. H. Crane, and Adonis; from President De Graw to Lizzie McGowan, Flora Hill, Alaska, White Cloud and Norway; from La Purité to Tidal Wave, William Scott, and Mrs. Thomas W. Lawson; from Miss Joliffe to Daybreak; from Charmer to Mrs. George M. Bradt and Olympia; from Astoria to Buttercup and Gold Nugget; from Rosy Morn to The Marquis and Genevieve Lord; from Crimson King to Gen. Maceo, Gen. Gomez, Egypt and Gov. Roosevelt — these indicate the giant strides made but tell little of the patient, intelligent efforts of the hybridizers. It is a record of which American horticulturists may well feel proud.

The violet, that other important member of the cut flower family, has grown in importance with the others. Its history does not contain as much of interest as does that of the rose or carnation. New double varieties (alleged) have been introduced but they are after all only strains of Marie Louise. New single varieties have been introduced, much superior to the old Schoenbrunn, but the great demand is for the double ones.

The chrysanthemum, which forms a by-crop in the cut flower market, exhibits one of the most wonderful efforts in American horticulture to develop and popularize a particular flower. To Mr. John Thorpe is due much of the credit for this. The exhibitions in New York, beginning in 1886, those in Philadelphia

and Boston, the importation from Japan of the collection containing Mrs. C. H. Wheeler and other good sorts, the importation in 1888 containing Mrs. Alpheus Hardy and other valuable varieties, (an importation, by the way, which has a romantic story attached to it of gratitude from a Japanese youth to the lady whose name the variety mentioned bears), importations from England and the continent, the rapid production of seedlings of pronounced merit here,— all combined to set afloat on the sea of popular favor the glorious "Queen of Autumn." It is highly creditable to our cultivators that well among the best varieties in the world today are found varieties raised here. The stamp of fashion was set upon the Chrysanthemum and although the fickle jade has somewhat changed in her attitude of late, particularly in the East, yet the impetus given carries it along and will undoubtedly do so for years to come. In hundreds of the smaller cities throughout the country, as well as in the large ones, the annual chrysanthemum show is a settled institution and this year there is to be one in New York on a magnificent scale.

Now let us glance at the evolution in the plant trade. It is divided, let us say, into five sections. The catalogue trade, the rooted carnation cutting trade, which is a branch really of the cut flower trade, the market florist near the large cities, who grows soft-wooded flowering and ornamental foliaged bedding plants for market and cemeteries, the grower of decorative plants, such as palms, for the city retail florist, and the florist in the smaller cities and towns who supplies a local trade almost exclusively. The first mentioned is perhaps the most important and most interesting. It is this branch of the trade which mirrors, and in a sense molds, public sentiment. Ever on the outlook for new plants and improvements in varieties, ever on the *qui vive* to gauge the popular taste correctly, the men engaged in it have to decide what to take up and what to drop; and as the majority decide, so it will be in nine cases out of ten. The catalogue man reaches where no florist or seedsman has yet ventured. The seed box at the the country store cannot; it is inadequate to satisfy the aesthetic sense of those who hunger after the finer grades of flowers and this want the catalogue and its publisher fill. The catalogue is the great vehicle for the distribution of horticultural literature, much

of it being sent gratuitously or as a premium on orders. The advertisements in the great magazines, in the weekly press and in the rural publications supply the inspiration for many to begin gardening who otherwise would never attempt it. The traveler for the catalogue man, particularly in nursery stock, the "home agent," the "club organizer," the local expert who has carried off a prize for the best this or that offered by the catalogue man, these are potent agents in the evolution of American horticulture. They are part of the great machine and although they are railed at by very conservative people, they are essential. It is in the wake of these that the local florist and nurseryman, as well as the seedsman, spring into activity; it is the catalogue which sets the pace for them, and were it suddenly to be withdrawn from circulation, many of those who abuse it would either have to take up the burden or cease business. The development of the catalogue has been wonderful in the extreme. Twenty-five years ago the most ambitious in the country was a book of about one hundred pages, six by nine inches, in a plain cover and sparsely illustrated. That was a tremendous advance over what was published ten years before. Today the leading catalogue has one hundred and ninety-four pages, is a book eight and a half by ten and a half inches, has an illuminated cover, six colored plates, colored photographic scenes, every page is profusely illustrated, and ten copies are distributed for one sent out twenty-five years ago. Although I am unable to say positively how many firms issued catalogues twenty-five years ago yet I think one hundred would cover them. Today there are about three hundred and fifty in the field. In addition to these we must consider the great number of foreign catalogues sent here; the American trade is no mean item to European houses. Owing to the great variety of stock carried by seedsmen, florists, and nurserymen, advertising must take the forms of securing distribution for the catalogue; they are all glad to send it to a bona fide buyer but must discriminate against the catalogue collector. Some still mail it free to applicants. Very ingenious are the plans adopted to secure distribution. The first I believe to advertise a specialty as a vehicle to distribute the catalogue was Peter Henderson with the celebrated Moonflower in 1887. To show the value of special adver-

tising well done there is no better illustration than this. He first offered the plant in his catalogue as *Calonyction grandiflorum* or "Evening Glory" in 1879, the text dilating on its "moonlike" flowers. In 1884 the name Moon Flower was used in the catalogue for the first time; the price was twenty cents each, then and up to 1887. When it was advertised in the magazines the price was fixed at forty cents each, and the demand was phenomenal, about sixty thousand plants being sold as against two thousand the previous year. This experiment showed so forcibly the value of a popular and descriptive name and the use of a specialty that the plan was followed by many thereafter with varying success. The use of the appellation "Ostrich Plume Chrysanthemum" for Mrs. Alpheus Hardy, and of "The Memorial Rose" for *Rosa Wichuraiana* were equally productive of results. In fact the effect of the latter was more far-reaching as it directed attention to the rose in such a manner that the raising of hybrids was stimulated in a great degree. The name of "Wineberry" for *Rubus phoenicolasius* was a palpable hit. But many overshot the mark, and some of the alleged popular names were not descriptive and were meaningless in their application. The Bush Lima Bean was another item which made a splendid specialty to advertise. The offering of a money prize for a suitable name was the natural outgrowth of the first principle, and for a time was a potent agent in attracting customers. All these are interesting as manifestations of the evolution in American horticulture. The catalogue trade in plants, influenced no doubt by the cut flower market, is given up largely now to roses, chrysanthemums, carnations, etc. Twenty-five years ago, there was a larger collection of plants offered than today. This is somewhat to be regretted. The greenhouses on large private places are mainly devoted to growing cut flowers instead of collections of stove and greenhouse plants. For this reason they are not so interesting to visitors, nor even to the owners, and a return to the former vogue would be an improvement.

The period which we are contemplating saw the rise, the climax, and the partial fall of the ornate bed, involved design, and carpet system of outdoor bedding. That it was carried to excess is undeniable. It is questionable taste to show prize fighters and

elephants in ornamental beds of plants. Butterflies could be tolerated; flags are not so bad; but ships that do not sail and railroad trains that never go, can only be regarded as monstrosities in lawn decorations. This school of gardening was vigorously attacked in the house of its friends by William McMillan at the Convention of the Society of American Florists in 1889. The temple of the cult was in Chicago and it is significant that at the World's Fair, in 1893, it was conspicuous by its absence. The pendulum swung too far the other way there, the reaction came; we are promised some ornamental bedding at the Pan-American in Buffalo this year. It will be welcome and will be a sort of poetic justice. My feeble voice was raised against the wholesale denunciation of ornamental bedding at the time and will continue to be raised. To do away with it would be a retrograde movement. The so-called "natural" system is not satisfying by itself, there is room for both in proper degree, for one is the complement of the other.

The grower for the retail stores is really a development of the quarter century. It is wonderful the quantity of palms, ferns, heaths, lilies, azaleas, hydrangeas, cyclamens, primulas, oranges, pandanuses, crotons, draccenas, poinsettias, and other flowering and decorative plants which are grown and sold now compared even with ten years ago. It is the finest development in horticulture. The market florist goes along in the even tenor of his way much as he did twenty-five years ago, only there is more of him. The same may be said of the country florist who grows for a home trade.

Now let us briefly inquire into the causes for the evolution we have been studying and view some of the effects produced thereby. First was the realization that the general florist could not produce first-class flowers; hence the specialist with all the improvements in structures and system. It is needless to go into the history of steam heating, large glass, improved ventilating apparatus, etc. This brought about better business methods; young men brought up in the country, accustomed to its ceaseless business activity, untrammelled by old-fashioned routine, got into the business; the older men were carried along by their example and helped them with their experience. The Society of American

Florists, founded in 1885, brought about a concentration of effort otherwise impracticable, if not impossible. A trade press was established through which intelligence was disseminated. The annual meetings brought men together and ideas were exchanged, rivalry was fostered, ambition received a spur. The florists stood before the country as a body of business men, they entered the legislative halls, they negotiated with transportation companies; in fact, they were metamorphosed as compared with the slow-going, plodding, happy-go-lucky men of a few years before. The great horticultural societies, those of Massachusetts and Pennsylvania, awoke to the growing importance of flowers and florists and increased the schedules of prizes at their exhibitions. The Department of Agriculture and the State Experiment Stations awoke too and listened to the calls from the florists; science was invoked and instead of the rule of thumb the laws of cause and effect came into play. The retail florist in the city became an artist; he rivalled the drygoods man in window display, he surpassed most of them in shop appointments. He transcended him and every one else in rolling stock. He dropped his first name on his signs and cards and became "The Florist" with a note of exultation in the title. The commission dealer created himself and has grown apace, a shrewd, energetic hail-fellow-well-met for the most part. The grower wrestling with the problem as old as business — From producer to consumer,— has formed his exchange, has become commission man himself and it is all part of the evolution.

Florists' clubs are in all the large cities; emulating their example, gardeners' associations have sprung up, organization is in the air and 'tis well 'tis so when rightfully conducted. We have the Rose Society, and the Dahlia Society, the Florists' Hail Association, the Florists' Protective Association. New plants are officially registered; printed labels are in general use in the shipping trade; we have wire stakes instead of split shingle; the hotels and private residences are bowers of exotic plants; one may order in New York to have flowers delivered in Paris, London, or Berlin; the florist has hitched on to natural gas for fuel; the great millionaires — some of them — have bestowed conservatories and parks on city and village; they have built great

ranges of glass for their own use; the florist is no stranger to cold storage and summer and winter look alike to him. These are a few of the mile stones in a quarter century's progress. In that period we have seen introduced the Bermuda Lily, the Crozy Cannas and their seedlings; we have seen roses propagated during summer and distributed by millions and tens of millions by mail and express; we have seen the home grower successfully compete in budded roses with the foreigner; cheap and good land with energy plus have beaten cheap labor; we have had *Asparagus plumosus* and *A. Sprengerii*; we have had the great Crimson Rambler Rose; we have seen the Bay Trees dot our streets; we have seen great botanic gardens, like the Bronx, brought into being; we have seen the wonderful development of the Arnold Arboretum and the Metropolitan system of parks in Boston; have seen the Back Bay Fens converted from a swamp into a garden; and here I desire to say that in all which tends to the advancement of horticulture along its best and broadest lines, the Massachusetts Horticultural Society has played and is playing a most prominent part. The "Boston" Fern has impressed itself on the horticulture of the day. Begonia Gloire de Lorraine has appeared, and this reminds me of how much we owe to Lemoine, Bruant, and other foreign hybridizers for improved heliotropes, syringas, begonias, fuchsias, pelargoniums (geraniums), chrysanthemums, roses, etc. There are other plants which signalize the quarter century, but I feel that I have named enough to show the progress made. It was my intention to devote some time to the advancement in small fruits but I understand that the subject has been covered by another.

The literature of the day and period must not pass unnoticed. We have the trade press already alluded to, "How to Grow Cut Flowers," an excellent book, Scott's "Manual," full of practical knowledge; we have the new editions of Peter Henderson's earlier works and his "Handbook of Plants." The Violet has been treated in a volume by Galloway, Mushrooms in another volume by Falconer, Sweet Peas have been treated by Hutchins, Dahlias by Peacock, Chrysanthemums by Morton, Barker, and others, Greenhouse Construction by Taft, besides other literature on horticulture. We are now receiving that comprehensive work

"The Cyclopedia of American Horticulture" by Bailey, to whom we are indebted for so much already. The Experiment Stations have sent out numerous reports on various matters so that the literature of horticulture has kept pace with its practical development. The only regret is that the amateur horticultural journals do not seem to attain the circulation and importance which should be theirs under such general prosperous conditions, but that will come in due time.

It only remains to observe in closing that the quarter century recently finished, and which rounded out the greatest century in material progress which the inhabitants of this planet had ever passed to their credit, is shown, I trust, to be a period rich in achievement for the horticulturist, particularly full of advanced progress, of concrete thought, of practical development for the floriculturist. The utilitarian branches have also advanced; but their greatest progress may well be credited to the preceding quarter century. The æsthetic branch, building on the others, as the airy minarets and graceful arches spring from and rest upon solid foundations and well buttressed walls, has grown full and fair and may well be taken as the fairest gauge of the nation's advancement along the lines of a higher civilization. As we stand on the threshold of a new century full of hopes and aspirations for still greater achievements, it is perhaps well that we should thus pause for a brief period, to beat time as it were in the march of progress, to take a breathing spell, to scan the achievements of the recent past and thereby perchance acquire new vigor for the work before us, or mayhap derive inspiration as we contemplate the great work done in this day and generation. While the commercial florist and horticulturist, as well as the private gardener, are justly entitled to their meed of praise for the part they played in the general advancement, too much cannot be said in laudation of the work of the men connected with the various Experiment Stations. A writer in the Agricultural Epitomist has aptly said: "In this utilitarian age, we are prone to measure success by dollars accumulated, by achievements upon battle fields, or in other tangible spheres, forgetting that back of the most worthy achievements there is science, and that science was likely discovered by some one who loved truth and his fellow man more than he loved himself

or money. The great army that is delving into the rocks, peering into the sea, reading the heavens, studying the plant, the fowl, the insect, conquering the elements and training them into subserviency to man, translating the language of nature, and flooding darkness with light, is unremunerated except by the satisfaction which the knowledge gives, and the world reaps the benefit."

Discussion.

Jackson T. Dawson said that the lecturer had only reiterated what every one present had seen of the beginning and progress of the traffic in flowers. In 1861 or '62 Hovey & Co. took their flowers to market in a basket. Smith of Cambridge did the same; he used to come to Hovey's nurseries and buy what he had not got. Crosses and other emblems were made in frames of willow or cut out of shingles. Not more than three hundred carnations were grown by any one. Lamarque was the favorite rose. New Holland plants were largely grown. Verbenas, which were then largely grown, have now gone out. *Epacris paludosa*, which has also gone out, ought to be revived. The number of greenhouses then could be counted on your fingers. A drug store on the opposite side of Tremont Street, was one of the largest places for the sale of floral decorations.

E. O. Orpet enquired as to the origin of the carnation Prosperity.

The lecturer replied that he could not give the parentage. It is not equal to Mrs. Thomas Lawson. Growers get them from three and one-half to three and three-quarters inches in diameter.

Thomas Harrison doubted the advantage of such extremely large flowers.

The lecturer thought we could not have too much of a good thing. Carnations will never be put with cauliflowers. We cannot get so many large ones as of smaller sizes. Growers like to get large flowers.

Willlam C. Strong said that he is now out of the line, but he had listened with exceeding pleasure to the lecturer. His last experience was with *Asparagus plumosus*.

William H. Elliott said there was once a great rage for dahlias; afterwards they went out and were scarcely seen. Now they are coming into fashion again.

The speaker moved a vote of thanks to Mr. O'Mara for his very excellent address, which motion was carried unanimously.

Mr. Orpet enquired of the lecturer what he esteemed the best decorative plant.

Mr. O'Mara replied that the question was a poser, but on the whole he should say Kentia.

He spoke of the development of floriculture at Natick as a revelation in its way, and perhaps the best organization.

At Chicago you can see from the top of the water tower a million square feet of glass devoted to the growth of flowers. The owners were originally market gardeners. At Hinsdale one man, not a florist but a business man, has six hundred and fifty thousand square feet of glass, on the ridge and furrow system.

Edmund M. Wood spoke of the environment of greenhouses. As ordinarily spaced in a house twenty feet wide, the first bed will produce forty per cent more than the second; the first bed shades the other. Ridge and furrow roofs shade one another; if the houses are twenty feet apart they do not.

In development we owe much to disbudding roses; the same treatment was afterwards applied to chrysanthemums. The florists said it would ruin their business, but it proved their salvation.

Mr. Harrison asked whether carnations require any particular soil. Those from other places are of little value when they get here.

The lecturer replied that he was not a carnation specialist, but they require a friable soil well enriched. Formerly it was believed that there was a "carnation belt," where they would succeed much better than outside of it; now it is known that they can be grown anywhere. Once it was thought that they could not be grown at an elevation of more than two thousand feet, but at Denver, at an elevation of six thousand feet, where they have three hundred sunny days out of three hundred and sixty-five, they grow better than at the seashore.

BUSINESS MEETING.

SATURDAY, March 2, 1901.

An adjourned meeting of the Society was holden at eleven o'clock today, the President, O. B. HADWEN, in the chair.

Ex-President William C. Strong reported that the Boston Co-operative Flower Growers' Association thanked the Society for the offer of one of its Halls for the Annual Carnation Show of the Association, but deemed it best to hold the exhibition in their own room.

The Secretary read a letter from Charles E. Cotting, presenting to the Society, in behalf of the Trustees of the Paddock Building, agreeably to the wish expressed by the Society, the two marble tablets in the staircase hall of the present Horticultural Building. It was voted that the thanks of the Society be presented to the givers for this kind act.

The Committee on Publication were authorized to print the Treasurer's Report as soon as it shall have been approved by the Finance Committee.

It was voted that the Building Committee be instructed to take charge of the removal of the statutes on the building, and the tablets in the staircase hall, before the expiration of the Society's lease of the Building, and report their action to the Society.

It was voted that the Library Committee be authorized to remove the library and library furniture to the new building, and that the Superintendent of the Building have charge of the removal of all other property of the Society.

It was voted that when any report deemed too long to be read in full is presented by either of the Standing Committees of the Society, the Chairman be requested to make a condensed statement of the salient points.

The decease of Edwin C. Lewis was announced, and Warren Howard Heustis, Patrick Norton and Joseph H. Woodford were appointed a Committee to prepare memorial resolutions.

The decease of Augustus Parker was announced by Ex-President William H. Spooner and it was voted that a Committee of three be appointed by the Chair to prepare a memorial of him. The Chair said that he would announce the Committee at the next meeting.

The Secretary announced the decease, on the 5th of December, 1900, of H. W. S. Cleveland of Chicago, Ill., and said that as a landscape gardener he was one of the foremost men in the country. He was associated with Robert Morris Copeland, and afterwards, at Prospect Park, Brooklyn, N. Y., with Frederick Law Olmsted. He had charge of many important works, among them being parks in Providence, R. I., Chicago, Ill., Brunswick, Ga., St. Paul and Minneapolis, Minn., Omaha, Neb., Sleepy Hollow Cemetery, Concord, Mass., and the grounds about the Natural Bridge, Va. His book on "Landscape Architecture as applied to the wants of the West" and several addresses on parks and kindred subjects were presented by him to our Library. At one time he engaged in the culture of fruit at Burlington, N. J., and was for twelve years Corresponding Secretary of the New Jersey Horticultural Society. During this period he attended the first meeting of the American Pomological Society. He was elected an Honorary Member of this Society in 1848.

It was voted that the Secretary express to the family of Mr. Cleveland the esteem and respect in which he was held, and that the same action be taken in regard to Mr. John Galvin, who died on the 24th of February.

The following named persons, having been recommended by the Executive Committee for membership in the Society, were upon ballot duly elected:

MRS. CHARLES T. WHITE, of Boston,
HARRY E. FISKE, of Wollaston,
CHARLES A. STONE, of Newton.

The meeting was then dissolved.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 9, 1901.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

FRUIT GROWING IN NEW ENGLAND AND ITS DEVELOPMENT DURING THE LAST FIFTY YEARS.

By HON. AARON LOW, Hingham.

If we go back fifty years we find that the culture of the various kinds of fruit adapted to our New England climate was in small amount as compared with the great importance in our productive industries that it holds at the present time. Then there was but a very small amount of grafted fruit, of the varieties which now are in great demand, and which are produced in immense quantities.

APPLES.

The apples then were produced mostly from orchards of natural fruit, as but few of our first-class apples of the present time were much disseminated then; in fact many were not then known.

There is no doubt that the apple stands first in commercial importance as being more largely cultivated than any other species of fruit. Scarcely a farm can be found in New England but has its apple orchards, and the products have ever been considered as the most profitable of the farm. Within fifty years there have been many new varieties of apples introduced, so that now in setting out an orchard we have a much larger number of choice varieties to select from than formerly.

There is no other variety as largely cultivated in New England as the *Baldwin*. It is well adapted to our climate, as it was originated in Massachusetts; is of strong, vigorous growth, an immense bearer of large, handsome red apples, and stands ahead of every other variety as a salable winter apple. The quality is first class for eating or cooking. I think there are more trees of this apple set out than of all others in New England.

Another first class apple well adapted to our climate is the *Rhode Island Greening*. This is a large green apple of excellent quality. Tree of strong vigorous growth, producing large crops of fine handsome fruit, fine grained, and of rich acid flavor. This I think stands next to the Baldwin as a profitable variety for orchard culture.

As one of the best winter keepers the *Roxbury Russet* is valued very highly. Twenty-five years ago this was much more profitable to grow than it is at present. Within a few years it has developed a tendency to mildew the fruit, and the apples do not grow as large and fair as formerly. Under present conditions it is not advisable to set out many trees of this variety.

The *Porter* and *Hubbardston Nonsuch* years ago were two of our best and most profitable fall apples, but for a number of years past a small worm has done a great deal of damage to the fruit of these two varieties as well as most varieties of sweet apples. It is called the Apple Maggot. Its method is to tunnel through the pulp of the apple in winding channels, thus rendering it worthless.

Without doubt the most destructive insect to our fruit is the Codlin Moth. According to Professor Slingerland the damage caused to the fruit crop by this insect alone amounts to many millions of dollars yearly. In 1892 this insect is said to have caused a loss of $2,000,000 to the apple growers in the single state of Nebraska. In the state of New York it is estimated that the damage to the apple crop yearly is $2,500,000, and the damage to other fruit enough to bring the total loss up to $3,000,000, or, in other words, the fruit growers of New York furnished this amount yearly to feed this destructive little insect.

The rapid multiplication of destructive insects has made it a necessity to the fruit grower to adopt such means as are most effective in checking their injuries to the fruit in the first stages of its growth, or immediately after the fall of the blossom. There is no more effective method that we can employ than to spray our fruit with the various insecticides as per the formulas of our Experiment Stations.

As an early variety, the *Williams* ranks very high. It originated in Roxbury. On rich strong land and given high cultivation

this is always a first class apple. Of good size, bright, handsome red color, mild and agreeable flavor, this is one of the most salable apples known, and usually brings large profits.

Red Astrachan is one of the earliest varieties. This is a very handsome apple, brilliant crimson color with a thick bloom, flesh acid, and of marked excellence in cooking. Tree a strong vigorous grower, and very productive. Fruit should be picked a few days before it is ripe, as it does not keep well if allowed to become fully ripe on the tree.

Duchess of Oldenburg. This apple is of Russian origin. Large, very handsome, streaked with red and yellow. Flesh yellowish white, sub-acid, excellent for cooking. Tree very hardy, a strong grower, an early and abundant bearer.

One of the most desirable of our fall apples is that superb variety, the *Gravenstein*. This is a large, handsome, striped apple, of the highest flavor and quality, and usually commands the highest prices. On strong, rich land it is one of the most profitable apples grown.

Many people prize a good sweet apple very highly. There is no better variety as an early sweeting than *Sweet Bough*. Fruit large, greenish yellow, very tender and sweet.

As a later sweeting for use from November to March, the *Jacob's Sweet* is a first class apple. Large to very large, yellow, splashed with red. Excellent to eat or bake.

King of Tompkins County is one of our largest and most showy red apples. Tree a strong grower and a good bearer. Fruit deep red; flesh tender, juicy and high flavored. Keeps through the winter. One of the best.

Fameuse or *Snow Apple*. This variety when well grown is one of the handsomest apples known, and usually sells at high prices. Of late years it has been inclined to mildew and this detracts from its value. Medium in size, deep red on a whitish ground; flesh very white, juicy, with an exceedingly pleasant spicy flavor.

Golden Russet. This is an old variety, but of such rich, spicy flavor that it is a universal favorite. Fruit medium size; skin of a decided yellow russet color, flesh tender, juicy and rich. Tree a vigorous grower and very productive.

There have been within a few years past quite a number of new varieties of apples introduced combining many desirable qualities as first class fruit, and originating in our own country. As one of the most promising of these new varieties *Sutton Beauty* ranks high. This is a good sized, handsome, reddish apple, of first class quality for the table or for cooking. Tree an exceptionally fine grower and of handsome shape; foliage bright, glossy green, and always healthy. A regular bearer of choice apples of fine quality.

McIntosh Red. This originated in Canada and is an exceedingly valuable kind. The fruit is dark red; flesh white, tender, juicy and of rich flavor. A regular bearer, resembling the Snow apple but of larger size and more hardy and not subject to mildew. It is a very desirable variety for orchard culture.

Wealthy. This apple originated in Minnesota. The tree seems to be perfectly hardy, and has given excellent satisfaction whenever it has been fruited. The fruit is of medium size, bright red streaked with white. Flesh white and of fine quality. Tree strong and healthy, one of the best for orchard setting.

Palmer Greening. This variety is not much disseminated but is one of the best in quality. The tree is not a very vigorous grower, and is said to be better when top-worked on strong growing varieties. The fruit is yellowish green, and of a peculiar rich aromatic flavor. A very good keeper and a very promising variety.

Wolf River. Originated in Wisconsin. The fruit is very large and handsome. Specimens of this variety at last fall's fruit exhibitions attracted more attention than any other. Fruit bright red, flesh white and of fine quality.

Pears.

The pear when grown in its full perfection is highly esteemed for its rich, sweet, and delicious flavor. As this is adapted to closer planting than the apple it is usually set in the home garden, as a greater variety of fruit can be had. Some of the best varieties of pears seem to do better when set as dwarfs grafted on the quince; in that case the trees can be set from ten to twelve feet apart. My experience has been that far better specimens can be grown on dwarfs than on the standard trees.

Angouleme, Louise Bonne of Jersey, Anjou, Vicar and Clairgeau are varieties much improved in the quality of the fruit when grown as dwarfs. Of the varieties more commonly grown Bartlett, Bosc, Sheldon, Seckel, Winter Nelis, Clapp's Favorite and Lawrence do best as standards.

As a variety adapted to almost all localities the *Bartlett* stands first. Fruit of large size, clear yellow, flesh fine grained, exceedingly tender and buttery and rich flavored. Tree a good grower, comes into bearing young, and is very productive.

Clapp's Favorite as a summer pear is a very fine variety when picked before fully ripe. Fruit of good size; flesh melting, juicy and sweet but sometimes inclined to rot at the core. Tree vigorous and healthy.

When we consider the highest standard of quality in richness and flavor the little *Seckel* stands at the front. Although it is one of the smallest pears we have, from its exceeding sweetness and unequaled rich flavor no collection is complete without it.

Dana's Hovey. This is also a small pear, but from its rich and delicious flavor is very highly esteemed. The tree is a very handsome grower and is very productive; fruit keeps till winter.

As one of the largest pears of high quality grown, the *Angouleme* will give as good returns to the grower as any, especially when grown on dwarfs. The fruit is very large, of fine appearance, always commanding a ready sale.

Louise Bonne of Jersey is another variety that does best on quince. This is a large sized, longish pear, greenish in color with reddish shading on the sunny side. Flesh very juicy and melting with pleasant sub-acid flavor. Tree a good grower and productive. This variety when well grown is very profitable.

Anjou. This pear, introduced many years ago by that veteran pomologist, Hon. Marshall P. Wilder, is one of the most valuable grown. Its reliability, uniform good quality, and long keeping, render it one of the most profitable varieties in cultivation. Fruit large, fine grained, with a rich vinous flavor. It does exceedingly well on the quince.

Clairgeau. This is one of the largest and handsomest pears in cultivation, also one of the best to grow on the quince. The fruit is yellow and red, and although not of the best quality is, from its

large size and handsome appearance, very salable. Tree a good strong grower and an early and abundant bearer. A valuable variety.

Lawrence. One of our best winter varieties. Fruit medium in size; flesh buttery, juicy and very sweet. Tree a moderate grower, but very productive.

Bosc. Truly a magnificent pear. There is no other pear combining as many first class qualities as this. The fruit is large, always perfect, and of the highest flavor, is distinct in form, of a deep yellow russet color. The flesh is white, juicy, with a rich delicious perfume. It sets its fruit singly scattered over the tree, as if it had been thinned, thus producing fine handsome pears. The tree is a good bearer but not a vigorous grower and does better when top worked on such strong growing varieties as Keiffer and Vicar.

Vermont Beauty. This is a handsome, medium sized, yellow pear with a bright carmine cheek. The flesh is rich, juicy, and aromatic, resembling the Seckel, which variety it immediately follows in ripening.

Worden-Seckel. This is a new variety, originated in New York. Fruit of medium size, flesh fine grained, juicy, and of excellent quality. Very promising.

Hardy. This is a large russet pear. Tree a strong grower and abundant bearer of handsome smooth fruit, with rich, slightly sub-acid flavor. It ripens in October. Very desirable.

Boussock. A large roundish pear, yellow when ripe, with a slight reddish cheek. Tree a vigorous grower and good bearer. Ripens the middle of September. A valuable and reliable pear.

Plums.

The cultivation of the plum has largely increased within the last ten years. The old varieties became so subject to the disease of the black-knot, that the trees soon died and it was almost impossible to raise a full crop of plums.

The introduction of the Japanese varieties created a new interest in growing plums. The trees proved to be not subject to the black-knot, neither were the small plums injured by the curculio nearly as much as the European or American varieties. Since

their introduction the better varieties of the Japanese plums have been largely set out. The trees are well adapted to our soil and climate, and appear to be less subject to disease than the old class of plums. There are quite a number of varieties of Japanese plums much superior to our old American or European kinds in quality of the fruit as well as in the vigor and healthiness of the trees. I will briefly notice some of the better kinds, with the principal points in favor of each.

Abundance. This was one of the first introduced, and is a first class variety in every respect. Tree a strong upright grower, coming into bearing very young. It is extremely productive of large handsome plums, of a bright cherry color with a heavy bloom. Flesh orange yellow and of a sweet, rich, sprightly flavor. Decidedly a great acquisition.

Burbank. With many this is reckoned as the best variety of the Japanese plums. The trees are very strong growers, inclining to spread their branches irregularly and coming into bearing very quickly. It usually sets the fruit very thickly and it is much better to thin the plums out severely, as those left will make much larger and handsomer specimens. The fruit is dark red to bright amber in color, roundish in shape and of good size. Flesh amber yellow, juicy with rich sugary flavor. If you have a place for but a single tree set the Burbank.

Wickson. This variety was originated by Mr. Burbank of California, and was obtained by crossing the Kelsey plum with Burbank, and is considered by him the best of the Japan plums. The tree is an upright, very strong grower. Fruit medium in size, glowing carmine with heavy white bloom. Flesh yellow, spicy, sub-acid, good. I have not fruited this variety as my trees are but two years set, but they are now covered with blossom buds for the next year. This has not been as thoroughly tested as Abundance and Burbank, but those who have fruited it speak very highly of it.

Satsuma. Another Japanese variety, but different from all the others, having a bright red flesh; is much prized for making jellies or preserving.

Hale. This was recently introduced, and although not fully tested is considered very promising. Fruit large, bright orange, mottled with cherry red and of extra fine quality.

Although many of the European and American varieties of plums are subject to the black-knot, still they are such strong, vigorous growers, and so exceedingly productive in fruit, that some of them are well worth risking to set in our plum orchards. When well taken care of, and the black-knot at its first appearance carefully cut out and burned, the trees will give heavy crops of very choice plums.

Bradshaw. This is one of the best; a very large dark purple plum; flesh brownish purple, juicy and of good quality. Tree a strong vigorous grower, setting its fruit well over the tree, and does not need thinning as much as some other kinds. Ripens the last of August.

Lombard. This is a variety of American origin, and taking all of its good points I think stands highest in the entire list of European or American varieties. The tree is a good grower, and immensely productive of plums of good size and very good quality. This variety usually sets its fruit so thick that it should be severely thinned to have the fruit grow to a good size and mature well; besides, the plums are not as liable to rot as when growing thick.

Pond's Seedling. This is of English origin and truly a magnificent variety. The fruit is large, reddish violet in color, juicy, and of fine quality. Tree vigorous in growth and an abundant bearer.

Smith's Orleans. This is a wonderfully productive variety. Fruit large, reddish purple; flesh firm, juicy, with a rich vinous flavor. The trees do well in all soils. An American plum, originated on Long Island.

Lawrence. This is also of American origin. Tree thrifty and productive. Fruit yellowish green with a light bluish bloom. Flesh melting and rich flavored. An excellent variety.

PEACHES.

Peaches when well grown are the most delicious of all of our fruits. But as the trees are very tender and with difficulty withstand our changes of climate, success in growing first class fruit is quite uncertain.

One of the most serious troubles in peach culture is the late frosts in the spring. If it is mild and warm in early spring and the peach buds start to grow, and then follow late frosts, the blossoms are often ruined and the crop is lost. The trees should not

be forced to make too large a growth, as a moderate growth ripens better and makes a harder, firmer wood, not as liable to injury from cold.

Among the great number of varieties now cultivated, the more choice kinds should be selected, and if well cared for we may get a good crop of this delicious fruit.

The peach is a rapid growing tree and comes into bearing at an early age. The trees do best on light warm land and should not be fertilized with stable manure, but with wood ashes, bone dust, and nitrate of soda, as this combination gives a more hardy and stouter growth, and a better development of fruit buds.

Among the many choice kinds I will select such as seem best adapted to our locality.

Early Canada. This is one of the very earliest, of good size, fine quality and fine appearance.

Early Crawford. A magnificent large yellow peach of excellent quality. Tree vigorous and productive. One of the best.

Coolidge's Favorite. A large white peach with crimson cheek. Flesh juicy, sweet and of rich flavor. Ripens about the middle of August. Very desirable.

Crosby. This is said to be the hardiest of all peaches to withstand our cold winters. Fruit bright orange yellow, sweet and of good flavor. Tree vigorous and healthy. An excellent variety for orchard culture.

Elberta. A large yellow peach of recent introduction. Tree vigorous, strong grower. Fruit oval, yellow, with blush on sunny side. Flesh pale yellow, tender and juicy. One of the most desirable of the new varieties.

Foster. Very large, deep orange red. Flesh yellow, very rich and juicy and of excellent flavor. Ripens in September. Originated in Medford.

Globe. A new variety. Strong and vigorous in growth and an enormous bearer. Fruit very large, yellow shaded with crimson. Flesh very rich and luscious. Should be in every collection. Ripe in September and October.

Carman. A new peach, originated by Mr. Carman, Editor of the Rural New-Yorker. This has not been cultivated long enough to determine its full value, but it is very highly recommended.

Fruit of large size, yellow, shaded with red; flesh juicy and of fine flavor.

Oldmixon. An old variety, but one of great value. Succeeds in almost all localities. Fruit large, yellowish white with a deep red cheek. Flesh red at the stone, tender and excellent.

Stump. A first-class variety. Fruit large; flesh white, very juicy with an excellent flavor; parts freely from the stone. Ripens in September.

Late Crawford. This is the standard late peach. Fruit of large size, greenish yellow, with dull red cheek. Flesh red at the stone, of rich, juicy, vinous flavor. Ripens the last of September.

Grapes.

Grapes can be grown so easily by any one who has but a small extent of land, training the vines on a wall, on a trellis, on the side of a building facing south, or to single stakes, that it is almost in every ones power to grow a few varieties at least for their own use. Light warm soil, well drained, is desirable, as the grapes will mature and ripen sooner than on soil not well drained. Wood ashes and fine ground bone are special fertilizers for the grape, as they will cause the vine to grow shorter jointed wood which will ripen better than long jointed wood. From the great number of varieties in cultivation, a selection of a dozen kinds will give one a good variety of the different colored grapes.

Campbell's Early. This is a very early grape of recent introduction, and wherever tried it is spoken of in the highest terms. It is earlier than the Concord, has a larger bunch than that first class grape and as a long keeper after being fully ripe is unequaled by any known variety. A black grape with very handsome bunch and berry. Ripens in September. Flesh very tender and juicy; flavor sweet, rich, aromatic; quality best.

Green Mountain. This grape was introduced a few years ago by Stephen Hoyt & Sons, New Canaan, Ct. The bunch is of good size; berries medium, greenish white in color; skin thin; pulp tender and sweet. Very early, always fully ripe in August. Vine vigorous and healthy, yielding heavy crops of fine grapes. A very desirable variety.

Eaton. This is one of the largest grapes in cultivation, both in bunch and berry. Vine vigorous, healthy and productive. The grapes have a tender pulp, and are juicy and of fine flavor.

Moore's Early. This is one of the earliest of the black grapes. Originated in Concord, Mass., by John B. Moore. This grape has been largely set in vineyards, in the grape growing localities, and is very highly esteemed as a reliable, profitable variety. Color black, with a heavy blue bloom. Ripens from two to three weeks before the Concord. Quality excellent. A first class variety.

Worden. A large new variety, a seedling of the Concord. Bunch and berry large size; color black with bluish bloom; fruit sweet and of fine quality. Ripens from one to two weeks before the Concord. No early black grape stands higher than this.

Brighton. A reddish grape of the highest quality, bunch and berry of good size; vine vigorous and productive. Fruit roundish, dark maroon color, flesh tender and juicy with a peculiar aromatic flavor. One of the best varieties for the home garden.

Moore's Diamond. A first class white grape. Bunch compact and shouldered. Berries large, round, juicy, with but little pulp. Vine a good grower, with thick healthy foliage, hardy and productive. Ripens a little before the Concord. Very promising.

Pocklington. Originated in the state of New York. Vine a very strong vigorous grower, hardy and productive. Bunch and berry of good size, color a lemon yellow. Flesh sweet, with a rich aromatic flavor. Has given good satisfaction to all who have grown it.

Delaware. The standard of quality. Bunch rather small; berries medium. The flesh has an exceedingly rich, spicy flavor. Vine not a strong grower; foliage apt to mildew.

Concord. Without any question this old and well known variety, as a reliable and profitable grape, stands at the head of the list. Adapted to a larger extent of our country than any other, it has been more universally grown than all others combined. Not of the highest quality in its fruit, still it combines so many desirable qualities that it is essentially the grape for the home garden. Bunches large and handsome; berries black with a heavy blue bloom. Flesh juicy and refreshing.

Salem. This is regarded by many as the best of the Rogers Hybrids. The vine is a strong grower, producing large bunches of reddish grapes, with a very sweet and rich flavor resembling that of foreign grapes. An excellent variety.

McPike. This new and wonderful grape is of western origin and is introduced by a western firm. It seems to have astonished all who have seen it on the grounds of its originator, not only in the size of its bunch and berry, but also in its wonderful vigor and the healthiness of its foliage as well as in the tenderness and delicious flavor of its fruit. Bunch and berry said to be fifty per cent larger than the Worden. Flesh ripens to the core, and is of excellent flavor, resembling the Black Hamburg. Wherever it has been exhibited at various State fairs in the west it has taken all first premiums. Another very important point in its favor is its long keeping quality after being fully ripe. The highest authorities in horticulture speak of it as a grape of wonderful qualities and promise.

Small Fruits.

The advancement of the culture of the small fruits in the last fifty years has been phenomenal. Previous to the introduction of the Hovey's Seedling strawberry, by the Messrs. Hovey of Cambridge, in 1836, the varieties of strawberries cultivated were few in number and inferior in size and productiveness as compared with the large number of choice varieties now cultivated.

The originating and introduction of the Hovey's Seedling was a marked advance in the culture of the strawberry. This new variety was a large handsome berry, deep shining red in color, flesh firm and of excellent quality. It was a pistillate variety and was usually set in beds with every third row of the Boston Pine, a staminate variety, to insure perfect fertilization of the Hovey's Seedling blossoms. When fully fertilized it was immensely productive of large first class fruit.

Since the introduction of Hovey's Seedling, strawberry culture has extended over the greater part of the country. Many new kinds of high merit in quality and productiveness have been introduced.

Since the close of the civil war the culture of strawberries has largely developed in the southern states and our markets now are supplied with this luscious fruit several months in the year.

Many of the new varieties are perfect in blossom and are grown without any other varieties being set with them.

The strawberry is of such easy culture that every home garden should have its plot for family use. Among the great number of varieties I will name a half dozen of the best—Belmont, Marshall, William Belt, Nick Ohmer, Beverly and Sample.

As following the strawberry, raspberries are highly prized for family use. Of the red varieties Cuthbert and Loudon are most desirable, and of the Blackcaps, Cumberland and Gregg are hardy, productive, and of fine quality.

Following in succession come the better varieties of blackberries — Snyder, Erie, Eldorado and Rathburn, first class kinds, producing large crops of berries of excellent quality.

Of that old and well known fruit, the currant, Fay's Prolific, Versaillaise, Victoria, and Pomona as new varieties are improvements on the old kinds of fifty years ago.

The gooseberry in some sections is largely grown. The better varieties now in cultivation, Josselyn, Smith's Improved, Industry, Triumph, and Columbus rank very high, and are not as subject to mildew as many of the older kinds. In the foregoing paper I have endeavored to name varieties in the different classes, which are best adapted to our soil and climate, as demonstrated by many years of cultivation in the different sections of New England. To those not well acquainted with the many varieties of fruits, these lists will, I trust, be a guide in selecting kinds which will be satisfactory in their future experience.

The details of setting out and after treatment I have omitted for the purpose of calling out by questions from the audience different methods and experiences on these points which although essential to know, differ greatly in application in a variety of soils and locations. I trust those present will freely question on any points which they desire to bring out.

Discussion.

Samuel H. Warren inquired as to the character and value of the Early Canada peach.

The lecturer replied that it resembles other very early peaches and like them will sometimes spot with rot.

Varnum Frost said that he could not agree with the lecturer in regard to some of the pears recommended by him. The Anjou has great failings; it is apt to be infected with spots of black fungus. Some have grafted their Anjou trees with Bartlett. The Keiffer pear is worthless.

The lecturer said that many peaches reproduce themselves from seed, the Melocoton, for instance. He had an orchard of Roxbury Russet and Baldwin apples which interlocked, and some of the limbs of the Baldwin trees showed a mixture of Russet, and some of the Russets showed the influence of the Baldwin pollen. The Keiffer pear is valuable to top graft with Bosc and other poor growing sorts. We should remember that kinds which do poorly with one may do well with another.

Mr. Frost said that the Hovey's Seedling strawberry used to grow with only the Boston Pine to fertilize it; there was nothing to surpass these two kinds. The Boston Pine was never beaten as regards flavor.

The lecturer spoke of a neighbor who raised fine Hovey's Seedlings and set out a bed for a friend which never bore.

E. W. Wood said that there had been no particular improvement in fruits in the last twenty-five years — not as much as in flowers. One man has done perhaps more than any other man in the country,—Luther Burbank. He originated the Burbank potato many years ago while residing at Worcester. Afterwards he went into the nursery business in California and devoted himself especially to originating new fruits. The speaker wished that we might have many more young men disposed to undertake the improvement of fruits. This can only be done by cross fertilization. We have none worth growing that were not grown twenty-five years ago. An Ex-President of this Society was about to set out an apple orchard of six hundred trees, and went to Mr. Curtis, one of the largest dealers in apples, to get his advice as to the best kinds to plant. It was solely a mercantile operation and Mr. Curtis advised him to set out five hundred Baldwins and the other hundred of different varieties, but on second thought he advised to plant all Baldwins. No other apple will return so many dollars

to the grower as the Baldwin. The speaker said that if he were a young man he would buy up land which can be got at a very low price and plant it with Baldwin apple trees.

Fifteen years ago no pear was so profitable as the Anjou, but within the last five years it has been failing. The Bosc is one of the best. The speaker esteems the Dana's Hovey the best pear grown; it requires thinning to get the fruit of good size. The Clairgeau would never be put into a list of pears for home use. It is purchased by hotel-keepers because it is as handsome as a bouquet and lasts tremendously.

There is scarcely a strawberry seen on our tables now that was grown fifteen years ago, and most of the kinds have been introduced within five years. We can get new varieties very quickly and there seems to be a prospect of continued improvement.

Great additions have been made to our fruits in the way of Japanese plums. Some have found them to rot even after thinning. At the Agricultural College the buds were reported to be as tender as those of peaches.

Market growers are very careful about planting blackberries or raspberries. There has been a great advance in transporting fruit within a few years, so that we now have strawberries in our market nine months in the year, and the quantity of fruit sold has doubled and tripled.

Samuel H. Warren said that fifteen years ago he set out a hundred Black Heart cherry trees, and last year he pulled up all but five and headed those back.

Mr. Frost said that he did not believe in apples mixing by cross-fertilizing; the Baldwin, Porter and Hubbardston are just the same as they were fifty years ago.

The lecturer said that the change produced by cross-fertilization is not in the fruit, but in the tree produced from the seed. The Marshall strawberry does not flourish everywhere. The conditions of fruit growing are very different now from what they were forty years ago.

John Ward said that he planted Hovey's Seedling strawberry with Early Virginia on one side, and for the first rod he got a good crop and beyond that none. The influence of the pollen of the Virginia did not extend beyond the first rod. There is no

better strawberry now for quality than the Hovey though some kinds are more productive. When he was a boy the St. Michael pear began to crack, and the Anjou is now becoming spotted and cracked, as may be seen by some in the market. The Bartlett seems to stand when others do not. There is no better pear than the Bosc. There is danger of overdoing the business of raising late pears; there is no demand for them after the first of December.

Joshua C. Stone asked, what is the use of setting out trees? Life is too short. People want green leaves more than they do fruit trees. There are as good apples and pears raised now as ever there were. He knows one man who has all kinds of fruits and has been forty years raising them, who is going to move away his seven thousand dollar house and put in a twenty thousand dollar house. The speaker dug up all the apple trees he had in good ground and has grafted over all his Baldwins and put in Williams and other new apples.

The lecturer said, in reference to Mr. Stone's remark that life is too short to justify planting trees,—Suppose you do not get a crop of fruit, somebody will come after you to get the benefit of your work. [Applause.]

Benjamin P. Ware said that the Essex Agricultural Society some years ago offered a premium of one hundred dollars for an apple as good or better than the Baldwin, but it has not yet been taken. He advised planting orchards in a hill town, and when the trees were just coming into bearing the owners got four or five dollars per barrel for the fruit in a year when apples were scarce. He asked whether Mr. Stone could make us believe that people are getting out of the way of eating fruit. When Luther Burbank wanted to go to California, where he is now a great originator of new fruits, J. J. H. Gregory paid him a hundred dollars for the Burbank potato, which set him up there. This variety is very popular through the west and in Europe.

Michael Sullivan had heard it said that the average market gardener has no respect for an apple tree, which may be true. Sixteen years ago he had no apple trees on his homestead, but twelve years after he had one of the finest crops of Baldwins. Last year he would have had a good crop but for the high wind in September, but he put fine apples into his cellar. Land is

getting too valuable for orchards in the vicinity of Boston, as at Revere.

William C. Strong said that a great many of the new plants cultivated by florists have been imported from abroad, but a much longer time is required in producing new varieties of tree fruits than of flowers.

Many years ago he bought the largest grapery in the country, and raised in it three tons of grapes annually which sold for from one to three dollars per pound; now we get them from California for twenty cents per pound. The apple is the fruit of Massachusetts. Messrs. Wilder and Hovey had two or three hundred varieties of pears, and could get six, eight or ten dollars per bushel for them, many varieties of which could not now be given away. He would not plant six hundred pear trees all Bartlett, though. We want to confine culture to a few varieties. He would discard Clairgeau and Keiffer; we want better kinds.

Mr. Wood said that florists here do not go abroad for new chrysanthemums; we have better varieties here than can be found in Europe.

Joseph H. Woodford said that we have the markets of the world and all the surplus fruit can be sold abroad. We can get better prices for fruit there than we can here. A young man can set out fruit trees and have a bank which in fifteen years will yield dividends. Though not a young man he means to set out a hundred trees this year. He thinks it every man's duty to set out fruit trees; somebody will come after us who will profit by them.

President Hadwen said that in 1842 he planted the seeds from which his apple orchards have grown, and when they attained a proper size he budded them in the nursery. Nature has never produced but one Baldwin, one Gravenstein, or one Rhode Island Greening apple. The Baldwin is the apple for the million, but the million do not know the best. Persons educated in a knowledge of the best varieties do not buy Baldwins. They are put up in carloads for wholesalers; his apples go to other parties. The Foundling is one of the best apples; it is a native of Worcester County.

The lecturer said that his father set out an apple orchard when about sixty-eight years old, and lived to sell hundreds of dollars worth of fruit from it.

Mr. Stone spoke of a man who bought ten thousand barrels of apples for a dollar a barrel and paid twenty-five cents apiece for barrels to put them in.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 16, 1901.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered on the John Lewis Russell foundation:

STUDIES OF SOME TREE-DESTROYING FUNGI.

By Professor GEORGE F. ATKINSON, Cornell University, Ithaca, N. Y.

When invited by your Committee to give the lecture this year on the John Lewis Russell foundation, I understood that the subject was to be in general, "Parasitic Fungi." It was but a week ago that I learned that the foundation for these lectures on parasitic fungi was made by Professor Russell for the purpose of presenting the "latest discoveries of the connection of the Fungi with Horticulture." It was then too late to think of changing the subject of this address to deal more particularly with the latest discoveries of fungi in relation to horticulture. But I trust that the subject I have chosen will be none the less acceptable. For while the studies which I am to present have been made chiefly on forest trees, some of the observations have also been made on fruit trees and shade trees. In a number of cases the same species of fungi are enemies both of fruit trees and forest trees, while the general problems of the entrance of the fungus and its progress in the tree are the same. The subject contributes very materially, if not directly, to the interest of horticulture.

The fungi of which I shall speak are sometimes called "wood-destroying fungi," because a number of them are known to infest timber and cause its decay. Few of them can enter a thoroughly sound tree — that is, they cannot from the outside gain an entrance unaided through the living layer of tissue, the cambium. The cambium envelops the entire tree, root and branch, and thus in an uninjured condition constitutes an effectual barrier against many of these tree enemies. For their entrance they are usually dependent upon other means than their own activities. These places of entrance are wounds from mechanical injuries due to a great variety of causes, wounds caused by truly parasitic fungi, and lesions caused by the natural process in shedding the lower limbs, when the process of healing over may be slow. For the reason, therefore, that quite a large number of the tree-destroying fungi enter through wounds, they have been called also "wound parasites."

I shall not attempt to review all the good work which has been done on the subject, but you probably recall the first address delivered on an occasion similar to this, by Dr. Farlow, on "Diseases of Trees likely to follow Mechanical Injuries." Mention should be made of the important work done by Professor Hartig in Germany on diseases of forest trees.

My own studies of this subject began about five years ago, and the results have been accumulating since that time, while very little of the matter has as yet been published. It has been my plan, as far as possible, to select one or more individual cases and then endeavor to trace the history of the relation of the fungus and its host. This would include a study of the present conditions, and an effort to determine, by examination, the time in the past when the fungus entered, the mode of its entrance and progress, as well as the probable cause of the wound which provided the entrance court for the tree enemy. In a number of cases these have been worked out quite satisfactorily. The studies have been made in New York State, chiefly at Ithaca and in the forests of the Adirondack Mountains.

Photographs have been made from time to time during the progress of the studies, and with the aid of them I hope to reveal the history of those cases to you.

A word might be said at the outset in regard to the relation of

these wood-destroying fungi to others, as well as in regard to their structure. They are among the higher fungi and belong to the larger group known as the *Hymenomycetes* to which the mushroom also belongs. In fact it is becoming customary with some to apply the term "mushroom" to all of the *Hymenomycetes*. However widely these plants differ in their form and structure they all agree in the general character of their fruiting surface. It forms a thin layer, or "membrane," covering definite parts of the fruit body, and consisting of innumerable club-shaped cells standing side by side. Each one of these club-shaped cells is called a *basidium*, and usually bears four spores.

There are several large families, or orders, in the group. I will call attention to a very few in each family in order to show more definitely the form and general character of the species which we will examine more carefully. In one of these families the fruit body is often spread over the surface of the wood in thin smooth patches, or some forms are shelving, when the underside is smooth and is the fruiting surface. These belong to the family *Thelephoraceæ*. A few of its members are very destructive to wood and some are parasites on trees. In another family the members are known as *coral fungi*, a large number of them belonging to the well known genus *Clavaria*, from which the family name *Clavariaceæ* is derived. The fruiting surface is distributed all over the surface of the plant. To a third family, *Hydnaceæ*, belong the hedgehog fungi, with the fruiting surface on spines, a few species of which are well known. A number of the members of the two last named families grow on wood, but often appear in late stages of decay. A few species like *Hydnum septentrionale* on maple, and *H. Schiedermayeri* on apple, are destructive.

The two largest families are known as the *Agaricaceæ*, to which the common mushroom belongs, as you well know, and the *Polyporaceæ*. In the latter family the fruiting surface is in the form of a honeycomb on the underside of the fruit body. It is to this last named family that the species belong of which I shall speak at some length.

Polyporus borealis.

Polyporus borealis occurs on pines, spruces, the hemlock, etc., and is widely distributed over the North Temperate Zone. It

occurs on living or dead trees, and is a "wound" parasite, entering through broken branches, through wounds caused by impact of falling timber, or where the cambium has been scorched by fire. The fruit bodies are entirely white. When old or dry they often take on a pale yellowish tinge. They are shelving, the cap attached directly to the tree, broad at the free end and tapering somewhat in a wedge-shaped manner toward the base. They are rarely single, and sometimes scattered over the trunk. They usually occur several close together overlapping in an imbricated fashion, and joined at the base in a common trunk at the exit from the tree.

The fruit bodies are rather soft and spongy. They last only for the season. They are from ten to twenty centimeters (four to eight inches) long by six to fifteen centimeters broad. They form larger masses where several are joined. The upper surface is rough with coarse tufts of mycelium giving it a very shaggy or hispid appearance. The honeycombed surface is below. The hymenium consists of quite regular pores with rounded openings in some specimens, or irregular, elongated and sinuous pores in other specimens, resembling the pores of *Dædalea*. But they are evenly sunk in the substance of the cap and therefore lack the essential character of that genus. The walls of the pores are thin, and the edges often irregular and jagged.

There are two cases of its occurring on living coniferous trees which I have carefully studied. One case is that of a hemlock spruce (*Tsuga Canadensis*). The other is that of a red spruce (*Picea rubra*), the common timber spruce of the Adirondack region.

The hemlock spruce was a large tree, sixty centimeters (two feet) in diameter, on a steep slope in one of the deep gorges (Fall Creek) at Ithaca, N. Y.

This example was observed in the autumn of 1899. The fruit body of the fungus was situated on a large wound on the trunk near the base. It consisted of several caps closely joined at their origin from the trunk of the tree. A section through the entire fruit body showed the radiating lines formed by the general direction of the mycelium in the caps from their common origin in the tree trunk.

We have a clue to the manner in which the mycelium of the fungus entered this particular tree. A log lying in the foreground, close by the trunk of the affected tree, told the tale. This tree in its descent, years ago, struck the slightly projecting base of the standing hemlock, and knocked off a large area of the bark and cambium, or growing region, at this spot. This wound was too large and the tissues too much bruised to permit rapid healing over. It offered therefore a sure infection court through which the mycelium entered.

It was also shown that the healing has been going on for a long time from the margin of the wound. But the wound is so large it is yet far from being healed. Had it later healed over, it could not, of course, save the tree from destruction because the wound parasite was already permanently established in the interior, or heartwood. Thus the wound which gave entrance to the fungus mycelium also offers a place for its exit in the formation of the fruit body.

From the time the mycelium entered the trunk at this wound, which must have been from twenty-five to forty years ago, the mycelium gradually made its way into the heart, and from there grew downward into the roots and upward through the heart to the top of the tree. Its presence on the roots was determined by the occurrence of the fruit bodies from a few places on exposed parts of the large roots, while external evidence of its having reached the top of the tree was shown by a number of dead limbs in the top, some of which had fallen. Evidence of its having reached the top was also found on cutting down the tree, and taking out sections at different points in the trunk. Here was found an abundance of mycelium and the heartwood was in an advanced state of decay.

The mycelium advances in certain definite directions in the wood of the tree. This is probably due to the structure of the wood. It grows in three different directions: parallel with the axis of the tree trunk, *i. e.*, up and down; radially, from the center toward the periphery; and tangentially. At one stage of development the mycelium may be very profuse and abundant. It then is present in the form of cords or strands which lie radially or tangentially in the channels which have been dissolved by

the action of the fungus ferment on the wood. These strands lie quite close together and are parallel. After being developed in considerable abundance the strands of mycelium largely disappear leaving behind open channels and furrows through the wood in the radial and tangential directions.

Shrinkage of the wood occurs at the same time because of the disappearance of a considerable content of the water and of the wood substance. This shrinkage results in checking the wood into numerous minute cuboidal blocks, marked off primarily by the position and solvent action of the mycelium. This becomes more pronounced as the wood dries, if the tree is cut, or if blocks of the wood are cut from the trunk and allowed to dry. In the early infection of the wood, and the early stages in the advance of the mycelium, before the larger strands have become established, the openings made by the mycelium are very minute. They take the same direction as the larger opening. In fact, the mycelium, instead of making a general attack upon the tissues, begins its advance at certain regularly separated points, and then extends along in parallel lines. If the wood is cut out at this early stage, one can see these minute perforations thickly scattered over the exposed surface. Sometimes, even in this early stage, shrinkage of the wood will have taken place. If not very marked when freshly cut from the wood, the shrinkage of the wood on drying marks it off in a beautiful manner, by fine lines and holes, into cuboidal areas.

In many of these cases of the heart rot of trees, after the heartwood is well affected, the mycelium, being well established and vigorous, gradually encroaches on the cambium or living area beneath the bark. In this way, many of the branches in the top of the tree die, and in some cases later the cambium of the trunk may be so destroyed as to kill the tree outright.

The red spruce example, in the Adirondack woods, was a tree of handsome proportions near Piercefield Falls, on the Raquette River, left by the lumberman a few years prior to 1896, the season when I observed the tree. At some distance there was no indication that the tree was diseased and I enquired of my guide, who had at one time some experience in cutting timber, why the tree was left. "That tree ain't no good," he replied. As we ap-

proached nearer, he said, "Don't you see the gum running from all the knot holes?" This, he explained, was regarded as a sure sign of "heart rot." Furthermore the tree was "checked" on one side, the crack being quite large and extending for some distance. The check was probably caused by a wrench given the weakened tree during a heavy wind. There was no other external evidence that the tree was diseased, and to satisfy myself that the tree suffered from "heart rot," I had my guide cut out a few blocks of the wood from the trunk. Two inches beneath the bark the wood was found in a "dozed" condition. The heart was not in a very advanced stage of decay though the area was very extensive. The mycelium visible to the eye was very scanty. Still the wood showed numerous fine perforations, and as some shrinkage had taken place, it presented the very fine divisions into minute blocks described above. I then searched more carefully for some fruit form of the fungus and found at the ground level, buried under leaves, a fruit body of the *Polyporus borealis* between two buttresses of the base of the trunk. The tree was not felled, and consequently there was no opportunity of ascertaining the special mode of infection in this case.

Polyporus sulphureus.

The sulphur polyporus has a very wide distribution and occurs on a great variety of broad-leaved trees as well as on certain of the conifers. It is known on the apple, walnut, butternut, locust, oak, ash, pine, hemlock spruce, and other trees. It occurs on living trees, the fruit bodies growing from knot holes or wounds from the mycelium in the heart of the tree; or the fruit bodies arise from portions of the trunk killed by the fungus. It is also a very common fungus on dead and decaying logs, stumps and roots.

The plant is easily recognized by the yellowish color of the caps, which are of the shelving form, sometimes scattered, but more often closely overlapping. Sometimes the caps are so closely crowded as to form a large tubercle from twenty to twenty-five centimeters or more in diameter. The upper surface of the cap is a bright orange red, while the lower surface, the honeycombed fruit surface, is sulphur yellow. The fruit bodies

are rather soft, the color soon fades and they are quickly attacked by insects, or decay after several weeks. They are short lived therefore, while the mycelium within the trunk is perennial, or at least lives from year to year without an annual infection.

Oak Tree killed by Polyporus sulphureus. A scarlet oak tree (*Quercus coccinea*) growing near the grounds of Cornell University was under observation for several years. The tree was standing on the edge of the Fall Creek gorge. It was first observed in 1897. At this time the mycelium of the sulphur polyporus had advanced so far from the heartwood into the sapwood, that the latter, as well as the cambium layer, on one side of the trunk near the base, had been killed. This gave an opportunity for the exit of the fungus and the formation of the fruit bodies on the outside. They were fine specimens, but were much more scattered than is usual with this species. The fruit bodies appeared during the succeeding seasons of 1898 and 1899. During the latter season the tree died from the injuries of the mycelium in its advance on the cambium, or living portion, of the trunk. It was felled, and several sections were cut out from the trunk for observation.

The decay of the heartwood had reached an advanced stage so that it was quite soft, and the moisture content was much less than in healthy trees. The lessening of the water content of the heartwood during the growth and spread of the mycelium caused a shrinkage in the wood. This produced several radial checks into which the mycelium had grown forming sheets of pure mycelium, sometimes called "punk."

Polyporus sulphureus imprisoned in a White Oak. A white oak tree about forty years old was growing quite close by the side of a larger tree on the grounds of Cornell University. The tree leaned slightly away from the larger one and there was a one-sided development of the branches induced by stronger illumination from that side.

The tree was felled in order to see if there was a corresponding asymmetry in the annual growth of the trunk which might be manifest in the excentric position of the annual rings. Before cutting the tree down there was no evidence that it was diseased. The

trunk to all external appearance was sound. There were no broken limbs, no wounds, visible. On cutting the trunk into sections to study the annual rings, the heartwood through a large part of the trunk presented unmistakable evidences of partial decay, following many of the annual rings and along by the medullary rays. The wood in these areas was being disorganized by the mycelium, and the latter was forming the incipient stages of punk.

The case was an interesting one, since the question arose as to how the fungus, now completely imprisoned, gained entrance to the trunk. The butt was sound, so the fungus could not have entered through the roots. Perhaps it entered at a large branch broken a number of years ago and now completely healed over.

All of the sections showed more or less decay at the central core of the heartwood where some of the wood was so badly decayed in some sections as to break out or crumble from the friction of the saw. One of the sections, not far from the base of the trunk, presented on the lower end, and near the periphery, a circular black area, resembling the dead remnant of a branch which might have broken off years ago, and healed over. On the surface of the same side of this section was a prominent enlargement in the trunk, resulting from the healing process. But the evidence of a wound here was largely obliterated because the old bark had formed over the surface. There was only a minute opening, very obscure, which was not completely healed over.

By examining successive sections of the trunk below this one it was observed that this black "core" representing the broken portion of the young tree gradually came to lie exactly in the central core of the trunk. This indicates quite clearly that the injury occurred to the tree in the sapling stage, and that the sapling was broken off instead of one of the branches. One of the upper branches then became the "leader" and in course of time the broken end of the sapling was enclosed by the healing tissue.

This section of the trunk was then sawed through lengthwise and in such a direction as to split the core of the dead sapling radially from the center of the new trunk. A view of one-half of this section was photographed. It showed the origin of the branch which became the new "leader" of the tree, as well as

the large and irregular end of the broken sapling covered over by the healing tissue.

The cross section shows that this injury occurred more than thirty years ago, very near the time that Cornell University was founded. Some accident, the cause of which we cannot now determine, befell this tree in its youth and the sapling was broken off, while one of the topmost remaining branches in time replaced the main trunk.

An injury resulting from this kind of fracture leaves a long and slivered end some distance from the point where healing takes place. It must be a number of years, then, before the healing process can advance so far as to cover the fracture. In this instance over thirty years elapsed. The broken and slivered end of the sapling offered the most favorable lodgement place for spores of fungi, and for the accumulation of detritus resulting from the constant weathering of the exposed surface. In these places moisture is also conserved. The conditions presented are favorable for the germination of the spores and entrance of the mycelial threads. No more favorable infection court could be provided whereby the fungus is enabled to enter the heartwood.

From this point of infection the mycelium spreads both ways, down the old trunk of the sapling, and upward in the branch which forms the newly established leader. The progress of the fungus is comparatively slow, and the disorganization of the wood accompanies it. The slow growth of the mycelium is probably due to several causes, the resistance which it meets from the wood, the action of tannic acids in the heartwood, as well as to the small amount of air in the interior of the tree. When sections of the trunk were cut, and piled together, the mycelium at the cut surfaces grew very rapidly. The mycelium here had access to air, and the moisture was conserved by the cut surfaces being in contact. In this way it was easy to demonstrate the presence of the mycelium in parts of the wood which to the eye appeared sound. The mycelium grew out from the wood into the moist air, along the concentric annual rings and the medullary rays, so that within twenty-four hours the location of the mycelium at these points was plainly demonstrated, and photographs taken at this time marked the location

of the mycelium in the infected areas. In several days' time, however, the mycelium spread out between the cut surface forming thin sheets of "punk."

POLYPORUS IGNIARIUS.

This species occurs on broad-leaved trees. It is known on the apple, oak, alder, beech, birch, maple and other species. The fruit bodies are hoof-shaped, very hard, almost stony, the upper surface black, while the lower surface, the fruiting surface, is brownish. The upper surface is marked by concentric furrows and ridges which mark off the annual layers. The fungus is thus perennial.

It is very generally distributed through hardwood forests. It is especially abundant in certain hardwoods in the Adirondacks. In some sections a large percentage of the beech, birch, and maple is affected. A quantity of the wood of affected trees was collected both at Childwood, St. Lawrence County, in 1896, and at Clearwater, Herkimer County, in 1898. At the latter place, the second flag station north of Fulton Chain, on the New York Central Railroad, there were excellent opportunities for studying it on the maple, and for determining the conditions which favor the entrance of the fungus into the heart of the tree. Since the mycelium cannot enter through the living cambium of the tree, an "infection court" must first be provided. These infection areas are provided in a variety of ways, in general their origin being the same as for other timber-destroying fungi which enter through wounds.

The conditions prevailing in a large portion of the mixed forests of the Adirondack region are such that a very common point for entrance is provided by the falling of the lower limbs. In the mixed forests the spruces and pines tower so far above the hardwoods as to cut off much of the light. The hardwoods are thus so shaded that the area of foliage is considerably lessened, many of the trees having few limbs, and then bearing few leaves compared with trees in the open, or even in a hardwood forest where all the trees have an equal chance for light.

A maple tree about twenty centimeters (eight inches) in diameter in the mixed forest at Clearwater had been affected by the

Polyporus igniarius for a number of years. The fruit body was several years old, of a triangular shelving form, and fifteen centimeters broad. Several entire sections of the trunk, one of them bearing the fruit body of the fungus, were collected and shipped to Ithaca.

Cross sections of the tree present a very characteristic and often beautiful marking of the wood due to the different stages of decay and the coloration of the wood. The more advanced stages of decay lie at the centre, the less advanced ones towards the periphery. The sound wood at the periphery is limited from the decayed area toward the centre by a broad and irregular discolored area. The discolored area is of a light brown color, and this is farther sharply defined from the pale yellowish white area within by a narrow black line. The later stages of decay in this maple tree advanced toward the periphery in separated columns, showing on cross section a radiating or digitate figure. The radiations, or figures, alternate with dark areas which extend inward from the periphery. Sometimes this figure is quite regular around a portion of the margin, while other portions are very irregular. The decay of the wood seems to proceed in waves from the centre toward the periphery, so that there appear several different stages. The outer one is marked by the dark discolored area, the next is pale yellowish white, the wood being quite soft, and an older and more advanced area at the centre of the heart. These different stages in the process of decay from the centre to the periphery are usually limited by the black line, which is bordered by a more or less well defined corona of color, darker than the area upon which it is advancing. In many cases these areas of decay progress very irregularly, and the figure becomes complicated and confused, especially in the later stages of the decay of a tree, so that dark lines extend very irregularly.

An examination of several maple trees bearing the *Polyporus igniarius* gave evidence that the peculiar discoloration of the wood accompanied the mycelium of this species of fungus, and might perhaps be sufficient to identify the species even where no fruit form of the fungus was present. An examination of the trunks of the beech bearing the *Polyporus igniarius* collected at Childwood, N. Y., in 1896, presented the same characteristic coloration

and marking. The maple is said by some lumbermen to be troubled by a disease which they term "black heart." It would be interesting to know if the coloration produced in the heart by the action of the mycelium of *Polyporus igniarius* is identical with this "black heart" disease.

It now becomes a matter of interest to determine the mode of entrance of the mycelium of this fungus into the tree. The fruit bodies were found to be situated at wounds. These wounds, or places of exit for the fruit form of the fungus, were "knot" holes formed by the dying away of the lower limbs, and the failure of the healing tissue to close the wound thus formed. The fruit form can make its exit through quite a small opening, and usually does, growing to larger dimensions outside as it ages. The first year's growth of the fruit form may then be but a small protuberance from one to two centimeters in diameter and showing no fruiting surface. This often increases in size each year, slowly, until from four to five centimeters in diameter, when it may increase more rapidly and each year form a new fruiting surface beneath.

A young fruit form was found on a trunk of a maple ten centimeters in diameter. This was the only evidence that the tree was diseased, all the other wounds at fallen limbs having healed over. A section of the trunk showed that the heart rot had begun. It was in the first stages of the disease and confined to a limited area, —that directly at the centre of the heart. There was present here only the discolored area which is characteristic of the younger area in older stages of the disease, described above. It is quite likely that the fungus enters at these slow healing wounds where the lower limbs have fallen, and that in some cases the wounds might entirely heal over and imprison the mycelium before the fruit bodies had an opportunity to form. That there was abundant opportunity for the mycelium of the fungus to enter at these wounds is shown by the evidence of a large proportion of the young maple trees in the mixed forest at Clearwater.

I have already called attention to the deep shade in the spruce woods where the tall spruces overtop the broad-leaved trees, and of the effect which this shade has in checking foliage development on the younger maples. Even on the young and middle-aged maples there are comparatively few branches, and these near the

top of the tree, the lower branches having died and dropped off. The same can be said of the beeches, birches, and other broad-leaved trees. Even on these topmost branches there are comparatively few leaves, because of the low light reaction. This means then that a comparatively small amount of the carbohydrates necessary in the formation of cell walls and woody tissue is manufactured. Consequently growth and the formation of wood goes on slowly. This interferes in a striking way with the healing processes needed to cover up the wounds caused by the falling limbs.

When there is an abundance of foliage and light, carbohydrates are formed in sufficient abundance to heal at a rapid rate. The healing tissue is firmer than the normal wood and working from within and close to the branch soon heals over and excludes the mycelium of the timber-destroying fungi. On the other hand, when there are few leaves and a small amount of starch is formed, the healing process goes on slowly, and before the opening caused by the falling limb can be closed, the portion of the branch exposed first undergoes weathering, and later the mycelium lays hold and enters, reaching the heart of the tree before the barrier of healing tissue is formed. From observations during several seasons it seems that this is a very common mode of entrance for the timber-destroying fungi in the broad-leaved trees.

A number of cases observed at Clearwater offer striking examples of the slowness with which the healing process goes on at branch wounds. The healing tissue formed slowly and did not close up against the base of the branch because of the small percentage of newly formed plant substance. Then for a series of years the healing would cease and an area around the knot would die back. Then for another series of years the healing would begin and advance over a portion of this dead area, when another period would intervene during which a still greater area would die back. In this way large and ugly open ulcers are formed, in which the wood within is exposed. This condition I have seen in young maples. On a number of them there were no fungus fruit bodies, but a section of the trunk showed all the characters of the heart rot caused by the mycelium of *Polyporus igniarius*.

The *Polyporus igniarius* has been known for a long time to in-

habit fruit trees, especially the apple, peach, etc., under certain conditions. During August, 1900, I observed an apple tree by the roadside a few miles south of Cortland, N. Y., with fruit bodies of this polyporus on it. A number of years ago the tree had been pruned, by cutting several large limbs near the trunk, and others out some distance from the trunk. The tree was probably diseased at that time and perhaps these limbs were dead or dying. This may have led to their amputation.

In all cases the fruit bodies of the fungus were formed at these cut surfaces, there being no other place of exit. The tree was probably seriously wounded when young, and the mycelium entering had spread all through the heart of the trunk and branches, but was unable to form the fruit bodies until the larger limbs were pruned.

Several of the branches of this apple tree, bearing fruit bodies, were taken for examination. The character of the heart rot is in all essential respects the same as those observed in the maple and beech.

Trametes abietis.

This plant is common on spruces and balsams. It is a shelving form, and much smaller than the species of polyporus just described. The caps stand out from the wood from two to five centimeters, are somewhat triangular in side view, and broader than long. The base is usually spread out where it is attached to the tree, and often the entire plant is spread over the surface of the wood. In the latter case no shelf form is developed. The upper surface of the shelf is marked by concentric furrows and ridges, and is more or less velvety or hairy. When young the fruit bodies are tawny in color, but in age they become a darker brown, especially above, while the fruiting surface is a yellowish brown.

Trametes abietis on the Red Spruce. An interesting example of a red spruce (*Picea rubra*) was examined during September, 1898, in the Adirondack mountains. This was near Nehasena, Herkimer County, on the tract owned by Dr. Seward Webb. Through the courtesy of Prof. C. S. Graves, who then had the supervision of the forestry operations on this tract, I had the privilege of following the lumbermen for two days to inspect

trees, or portions of trees, which were discarded after they had been felled.

In this particular case the entire tree had been discarded, although two logs had been cut from the trunk. On approaching the tree I first came upon the stump, and searched here for some evidence of the reason for rejecting the timber. Near the periphery of the stump, in the older sapwood near its junction with the heartwood, was a crescent shaped area in cross section about three centimeters broad and fifteen centimeters long. This was distinctly marked off from the surrounding portion by the coarser fractures of the wood from the crosscut saw used in felling the tree. This indicated that the wood was here slightly "dozed." The remainder of the stump was sound. This small area, showing such a slight alteration in the wood, probably would not have been considered objectionable.

On examining the cut made for the first log, sixteen feet above, the entire heart proved to be badly decayed. A large part of the sapwood was also invaded, and the cambium was being encroached upon. There remained only a thin shell of living and unaffected tissue underneath the bark. The heartwood was so soft that the fracture from the saw teeth was irregular, roughly cut and partially "ironed" down by friction from the saw blade. Still another log above this one had been cut off by the woodmen in the hope that the heart would be sound, and that a good log could be obtained near the top. This cut, however, presented a condition similar to the first one, — the heartwood and sapwood were badly decayed. This condition was sufficient to cause the abandonment of the entire tree. There were no evidences, on the trunk below the branches, of the fruit bodies of any fungus, nor of any injury which might have afforded an entrance for the fungus. The cut ends of timber were so badly roughed up by the saw that no structural characters in the diseased timber, which might aid in the determination of the species of fungus, could be seen. The next step was to determine the fungus and the place where it entered the tree.

Since the decay at the stump was so slight, and the diseased area so small in comparison with the extensive injuries farther up in the trunk, it was quite evident that the fungus had not entered

from below. Upon searching in the top of the fallen tree, it was found that the "leader" of the tree, when about five centimeters (two inches) in diameter, had been broken off, possibly by a falling tree thirty or forty years ago. This leader, as a dead, decorticated object still projected from fifteen to twenty centimeters, above the point where the healing process was going on. One of the upper branches at this point had become the leader.

This old fracture of the main trunk, years ago, very probably provided an opportunity for the entrance of the fungus. Most conifers are provided with a quantity of free resin in the young branches or shoots, or the growing portion of the trunk. As is well known this resin flows freely from fresh wounds, and often continues for some time from old ones. The presence of this resin, and its free exudation from wounds, is nature's most effective method of blocking the way to the entrance of timber-destroying fungi in the conifers. When the wound is small, or the broken branch or shoot is young, the amount of resin forms an effectual barrier against the entrance of this class of fungi. Where the wound is larger, or the shoot is older, the process of healing over requires many years, and the older portions of the wood do not yield so great an amount of free resin.

The broken shoot in this example was five centimeters (two inches) in diameter. Healing began from twenty to thirty centimeters below the broken end. After thirty or forty years the dead prong still projected from fifteen to twenty centimeters above the healing surface, and probably never would have healed over. During this long time the fungus mycelium had an opportunity to enter, travel down the heartwood of the trunk and reach the butt. It is interesting to observe that while the fungus mycelium gained entrance through the broken area of the leader in the top of the tree, and traveled downward, the greater injury to the trunk was some distance below. This is probably due to the greater amount of free resin in the younger portion of the trunk above. While the mycelium traveled downward through this, it did not spread rapidly here nor bring about such a complete disintegration of the tissue. Sections of the trunk just below the point where the fungus entered, and for some distance below, show that the heartwood is firmer and harder, though invaded by the mycelium. The wood

is also very much stained, brown irregular areas being often marked off by black lines or divided up into smaller areas by black lines. The mycelium also traveled upward in the newly established leader of the tree. From the trunk it had invaded many of the branches in the same way. As is usual in such cases a number of the branches had been killed. These dead branches then yielded readily to the disintegrating action of the fungus.

On a few of the limbs fruit bodies of *Trametes abietis* were found. A branch bearing a fruit body and broken at this point shows the gross structural characters of the wood affected by the mycelium of this species. At one stage in the decay of the wood there are numerous areas in which the process of disintegration is localized, or where it proceeds much more rapidly than in the surrounding wood. These isolated centres are quite evenly distributed. The wood is broken down completely and largely consumed, leaving a partial skeleton, or nearly all of it having disappeared. The remnant, as well as a thin layer of the bordering tissue, is bleached and white. It is thus in strong contrast with the reddish color of the surrounding wood where the decay has been checked, or has proceeded more slowly. This rapid local disintegration, then, forms numerous small "pockets" distributed through the affected wood at a certain stage in the progress of the disease. They are plainly visible because of the bleached tissue.

These pockets are a characteristic feature in one stage of the heart rot of the spruce from the mycelium of *Trametes abietis*. If they are found in the heartwood of the trunk of this individual spruce it would be quite conclusive evidence that the heart rot here was caused by this fungus and that the infection having occurred at the broken trunk in the top of the tree many years ago had gradually spread down the trunk to the base and out into numerous branches, some of which have been killed as a result. Sections of the trunk of this tree were cut out at different places and shipped to Ithaca for study.

On splitting sections of the trunk, cut from the discarded logs, these characteristic pockets were found to be present. They occur in the portions of the trunk where decay has made considerable progress, the entire heart being invaded, and the fungus encroach-

ing on the sapwood. When cut with the crosscut saw, or even with a finer saw, the ends of the blocks do not show the pockets, since the soft wood is so readily fractured by the teeth of the saw. But when the end of a block is planed off smooth the pockets in transection are quite distinctly brought to view. From a side and end view the pockets are seen to be oblong in side view and cylindrical in cross section. They are from two to three millimeters broad and from four to six millimeters long. In the younger portions of the trunk, some distance above where logs were cut, and below the point of entrance of the fungus, and thus nearer it, the pockets were not yet formed. This is probably due to the fact that while the mycelium first penetrated the heartwood here, the latter being younger was more resistant and the process of disintegration proceeded less rapidly. The pockets appearing on certain of the branches is accounted for by the fact that these branches had been killed for some time, and were consequently in a less resistant condition.

The formation of pockets by the rapid disintegration of the tissues at many centres recalls the "peckiness" of cypress wood caused by the mycelium of a fungus yet unknown. The pockets in the cypress wood are much larger, however, and the structural character of the affected wood is quite different. In the case of the cypress trunks affected with this disease known as "peckiness," it is believed that the fungus, while developing at the centres, excretes an enzyme, or "ferment," which permeates the surrounding wood and acts as an antiseptic which prevents the further disintegration. It is possible that this is to some extent the case in the formation of the pockets in the spruce timber; that is, that the wood intervening between the centre of rapid disintegration, becomes permeated with an enzyme excreted by the mycelium which renders it immune for a time, or at least retards the disintegration of the wood. But if this is the case, the effect of the antiseptic is not lasting. In the case of fallen logs affected by the *Trametes abietis* the decay continues until all parts of the wood are in a much decayed condition. Still, in such logs, it is quite evident that the progress of the disintegration has been intermittent, certain centres having first decayed, and in time spreading from these pockets to surrounding areas until all the

wood is brought under complete contribution to the mycelium. In such decayed spruce wood, there are farther evidences that the decay has spread from numerous centres which have been extended until they finally meet. This is shown in the varying coloration of the wood, and especially by black boundary or limiting lines.

Rhizoctonia.

There is a class of root and stem diseases which has been more or less obscure because the fungus concerned is not known in the fruiting condition, or, if so, only in a few instances. Since considerable information has been gained during the last few years in identifying the mycelium, and in separating it from well known fungi causing similar diseases, it may not be out of place to speak briefly of them here. There is an additional reason for speaking of them because the fungus is known to damp off a number of different kinds of seedling forest trees, and even in some places to climb and grow over the surface of the branches of mature pear trees.

I first observed the fungus in Alabama while studying the diseases of cotton. Here it was observed attacking seedlings, damping them off, or producing ulcers at the ground level, called by the planters "sore shin," and thought by them to be wounds caused by contact of the shovels used in cultivation. Later, in 1895, at Ithaca, N. Y., I found it a common cause of damping off of seedlings, especially of lettuce, radishes, and often of cabbages, egg plants, etc.

In a number of cases where these seedlings have been grown under conditions favorable for damping off, this *Rhizoctonia* has always occurred on them, while cucumbers, cress, sunflowers, etc., grown under the same conditions and in the same soil were affected with the well known damping off fungus, *Pythium debaryanum*. This is of interest not only in demonstrating that a large percentage of damping off of seedlings, generally attributed to the *Pythium debaryanum*, is caused by this sterile fungus, *Rhizoctonia*, but also in affording an example of selection of food on the part of different fungi in producing a similar disease.

While there is no fruit form by which we can identify this fungus, there are certain characters of the mycelium by which one

can quite certainly recognize it. The mycelium is branched and septate, that is, divided into cells which are several times longer than broad, and are thus cylindrical. Wherever a branch arises from the mycelium the position of the first septum, or wall, in the branch is at some distance from the parent thread, and this small section of the branch is clavate in form. This is one of the important characters which aid us in identifying the mycelium of this sterile fungus.

In later stages of its growth the mycelium tends to form cords on *rhizomorphs*, by the union into a strand of a number of mycelium threads. These strands in years become brownish in color. There are also formed on these strands rounded enlargements about the size of a radish seed or bird shot. These are known as *sclerotia*. These are also brownish in color, though at first white and fluffy. On the surface of these *sclerotia* are very loose threads, and these are very characteristic in form. They are broader than the threads of mycelium, the cells are shorter, and strongly constricted at the walls, so that the threads are of a moniliform, or beaded, appearance. While these chains of elliptical or barrel shaped cells are not spores, they often separate, two or three remaining joined together, and may then function as spores. So in this way, while the fruit form, with spores, is unknown, bodies are formed which function as spores, and the *sclerotia* probably are a resting stage to tide the fungus over unfavorable periods.

Aside from diseases in the nature of damping off of seedlings, some serious diseases of older plants have been traced to the action of *Rhizoctonia*, especially of the beet and potato. In the case of the beet, (see Cornell University Bulletin 186), the fungus obtains a hold at the bases of the leaves. The leaf bases become blackened, and this is followed by the withering of the leaves. Then the fungus works into the crown of the beet, producing a browning of the tissues here, and later, cracks appear. The disease breaks out at isolated points in the beet field and spreads radially from these centres. This disease is best known in New York state. It has been found in Ohio, also in Iowa. It probably has a very wide distribution in this country, though it appears to be different from the *Rhizoctonia* disease of the beet in Europe.

In Europe a *Rhizoctonia* disease of the potato has long been known. During the summer and autumn *Rhizoctonia* has been found on the stems and tubers of potatoes in New York. (See Cornell University Bulletin 186.) Examination shows that it is very common on the tubers; at least it was during the autumn of 1900. The infected plants sometimes are covered with the *sclerotia*.

It is evident from these, and similar studies, that there is no cure for the diseases caused by wound parasites after once the fungus has entered through the wound into the interior of the tree. For a few years there may be no apparent injury but with the lapse of time the tree becomes badly injured if not destroyed. The trees may live for years, or even a century or more, with the fungus inside, still growing. They may be so weakened that they are broken down or uprooted during strong winds. Shade trees may be rendered unsightly, and lacking in density of foliage. Fruit trees may be rendered less fruitful, if not ultimately killed. Timber trees in a very few years may be so injured as to be worthless for the market.

In their relation to forestry these studies emphasize the desirability of careful and economical methods in the felling of timber to protect the young stand from injury, in the supply of light to the forest floor, and in the protection from fire. For while many forest fires may not be so severe as to kill the trees outright the fire often scorches exposed roots, or the base of trunks, where the leaves are thick, or by a dead and dry log or stump, thus affording an entrance for these wound parasites.

In the handling of fruit and shade trees there should be the greatest care from the nursery stock to the fruiting tree, to prevent wounds. In pruning operations especially should there be care in pruning smooth and close to the trunk, followed by the use of some antiseptic wash or paint. Perhaps no better example of the good effects of proper pruning of shade trees can be seen than in the suburbs and vicinity of this city of Boston. But all through the land there are still numerous examples of careless and ignorant methods which should be speedily consigned to the past.

The lecture was illustrated by stereopticon pictures which added much to its interest and value.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 23, 1901.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

TWENTY YEARS' EXPERIENCE IN PEACH GROWING.

By JOHN W. CLARK, North Hadley.

The peach is a native of a warm climate. China and the United States are the only temperate climates where it comes to full perfection in the open air. Peach growing in the United States dates back nearly to the time of the first settlement, for, in 1638, we have account of peaches near Jamestown, Virginia, and peaches were the first commercial fruit grown in New Jersey. We also have accounts of fruit stones and kernels sent to Capt. John Endicott, Governor of Massachusetts Bay Colony, about 1629, among which were "Stones of all sorts of fruites, as peaches, plums, filberts, cherries," so we are safe in the conclusion that the peach was among the first fruits grown in this state.

Its cultivation however did not increase as rapidly in New England as it did further south, along the Delaware peninsula, where its growth was rapid,—so rapid in fact, that from this section the markets of the north and northeast have drawn the bulk of all their peaches until a very recent date. Up to about the year 1800 peaches flourished and orchards lived to a great age. There are accounts of old orchards throughout the peninsula, broken down and renewed perhaps a dozen times, that were healthy and bore good crops of fruit.

About the date given above (1800) a disease called the "yellows" appeared in the vicinity of Philadelphia, from where it spread north, south, east, and west, until it covered the whole peach area east of the Mississippi.

It is asserted that the yellows was not known in Massachusetts prior to 1837 and peaches were grown in the eastern part of the

state well into the fifties. After this the yellows became so destructive that the growing of peaches was practically given up for a time in this state. I can remember the old peach trees that grew back of my home in my childhood. This must have been toward the end of the fifties. After these old trees died out, the new ones planted were short-lived and I remember only two or three seasons when we had peaches, until the orchard that I planted in 1878 bore its first crop, in 1883, of about two thousand baskets. This, as far as I have been able to learn, was the first commercial crop of peaches of any considerable size ever grown in western Massachusetts, and it is from the impetus this modest crop of peaches, grown on Mount Warner, in North Hadley, in 1883, gave to the long discarded peach, that the revival of peach growing in Massachusetts dates. Connecticut which boasted a four million basket crop of peaches the past season, took her start from this same crop of fruit.

Whether the disease known as the yellows is contagious or not I will not pretend to say; but from its history and the way it acts I am strongly inclined to believe that it is. I think we have yet to learn just what it is and how it spreads. But one thing is plain to all successful peach growers: that when a peach tree ripens its fruit prematurely, the fruit being of a much higher color than healthy fruit of the same variety, and having a flat or bitter taste, the sooner all such trees are dug out by the roots and burned the better it will be for the owner. A tree in this condition can never be made to produce profitable crops of fruit. A new tree can be planted and brought to bearing age cheaper than a diseased tree can be nursed to a convalescent uselessness.

The best location for a peach orchard is on high ground above that of the surrounding country and having a good circulation of air. To show the importance of a high location let me state that in my orchard during the winter of 1898 — '99 the thermometer registered twenty degrees below zero on the morning of December 14th. At the foot of the orchard three-fourths of the peach buds were killed. Halfway up the hill fully one-half of the buds were alive, while at the top three-fourths of the buds were uninjured. The difference in temperature between the top and bottom of the

orchard was four degrees, it being colder at the bottom. The difference in elevation was about two hundred feet. The peach buds today show nearly the same difference at the different elevations.

The soil best suited to the peach is a well-drained sandy loam. A heavy and wet clay is the least suited.

In making choice of varieties of peaches to plant in Massachusetts hardiness of tree and bud should take a prominent place. For commercial orchards the early ripening varieties should not be planted, as they will ripen at the same time that the markets are supplied with the best of southern fruit. Mountain Rose is the earliest variety I would advise planting. Of the older varieties, Crawford's Early and Crawford's Late and Oldmixon seem to be the best. Of the newer sorts Elberta and Champion stand well to the front. If Elberta proves hardy it will be a profitable peach to grow. Some markets call for yellow fruit, while others want white, and varieties should be selected according to the market to be supplied.

Before planting the trees the ground should be ploughed and fitted the same as for corn or potatoes. The best distance to plant peaches where they are planted alone is probably from fifteen to eighteen feet apart each way. This will give from one hundred and fifty-four to one hundred and eighty trees to the acre. It has been my practice to plant peaches with apples, setting three peaches to one apple. I know many object to this and perhaps with reason, but my chief object has ever been to get an apple orchard, peaches taking second place. Others may think that more can be made with peaches alone, but in my case the one crop sold in 1883, six years from planting, paid for the land and all the expenses of the orchard to that time; so that the apple orchard six years old cost me nothing. The peach orchard I now have, planted in the same way ten years ago, has given three good crops of peaches, and today gives promise of a better crop than it has ever borne. This does not prove to me that I made a very great mistake in setting peaches with apples; and if planting an apple orchard where the soil and location were suited to peaches I should set peaches between the apple trees as in the past.

Peach trees should be pruned to a straight stem about two and

one-half feet high when planting, and by annual pruning kept moderately low in order to lessen the expense in thinning, gathering the fruit, and pruning the trees. The whole surface of the ground should be kept cultivated from early spring to midsummer, from the time the trees are planted until the orchard is given up, for if there is one fruit which needs thorough cultivation it is the peach. The trees should be thoroughly examined for borers in early summer and late fall. When there is danger of mice gnawing the trees in winter, I know of no better way to protect the trees than to bank with earth, removing it as soon as it can be done in the spring.

Where the soil is of average fertility and the surface is kept thoroughly cultivated, little, if any, fertilizer will be needed until the trees begin to bear, unless it seems advisable to sow a little on the surface of the ground near the trees at the time of planting. The best fertilizer for the peach, and in fact for all of our fruits, is potash and phosphoric acid, to which may be added a little nitrate of soda, if the trees are not making enough wood growth, but this should be used with care. When the trees are old enough to bear and there is promise of a crop of peaches, a liberal dressing of the fertilizers named should be applied early in spring and sown broadcast over the whole surface, using one thousand lbs. of fine ground bone or South Carolina rock phosphate and five hundred lbs. high grade sulphate of potash to the acre.

The fruit should be thinned as soon as the June drop is over leaving the fruit three or four inches apart, removing all small and imperfect specimens. Thinning increases the size of the fruit to such an extent that the yield is not materially lessened, if at all; and it also increases the price at which the fruit sells. The drain on the tree will be much less when seventy-five peaches fill a half-bushel basket than when it requires one hundred and fifty, and the price at which the larger fruit sells will be nearly double that of the smaller.

If spraying is practised in a proper manner good results will follow; but if done in a careless way injury will result from it. When spraying peaches only the lime and sulphate of copper mixture should be used, as there is no need of Paris green or

other poisons on the peach. The solution should not be stronger than four pounds of sulphate of copper, and five pounds of lime to fifty gallons of water. Spraying just before the buds open, then after the fruit has set, and again in two or three weeks will prevent spotting and cracking of the fruit and make it much larger. If the season is unusually favorable to fungus growth it may be advisable to spray again.

Varieties of the peach vary greatly in their ability to withstand extreme cold and many claim that seedlings are more hardy than budded fruit. This statement is too general; at least this has been my experience, for with me different seedlings have varied in regard to hardiness as much as have the varieties of budded fruit and I think that a hundred different kinds of each taken at random would show about the same average in hardiness. Every budded variety was once a seedling and its hardiness today is the same as when first grown as a seedling, provided it is in as healthy a condition. It is also claimed that varieties having large flowers are more hardy than those having small flowers; this, I think, is not founded on fact. The Oldmixon, which has very small flowers, is one of the most hardy of our peaches.

Without taking the time to discuss the different theories given to explain why peach buds are killed, the one that in my opinion comes nearest to the real cause is this:— from the time the leaves of a tree drop in the fall until they start in spring there is more or less circulation of the sap contained within the cells of the buds going on and depending on the temperature. The sap contained in a tree during its dormant state is more dense and contains less water than when the tree is growing. Each liquid has its freezing point and such as contain water expand in freezing. The less dense the sap or the more water it contains the easier will it freeze solid; and the more dense the sap the more cold it will take to freeze it solid. In freezing solid the expansion of the sap ruptures the cell walls of the fruit buds and they are killed. The killing of the buds can be detected after a severe cold night in a very short time if the buds are taken into a warm room and thawed out. Within an hour's time the centre of the buds will show a discolored appearance and will turn brown in a few hours. If the sap in the cells does not expand enough to

burst the walls or if the tissues are elastic enough to escape being ruptured, the bud is not injured. This, to me, is the most plausible explanation of peach buds being killed when the mercury is little, if any, below zero and of not being killed when the mercury drops to fifteen or twenty degrees below zero; and also why one variety will stand more cold without injury than another. It depends on the amount of water in the sap and elasticity of the cell walls.

From 1882, with the exception of four years, 1888-'92, I have kept a record of the temperature whenever the mercury went to zero, or below, and the condition of the peach buds at these dates. The results are shown in the following table:

Lowest Temperature of the Winter and Date when Buds were Injured.

Winter of	1882–'83; Jan. 23,	8°	below.	Buds uninjured; good crop.
" "	1883–'84; Dec. 23,	23°	"	Buds killed.
" "	1884–'85; Dec. 20,	18°	"	" "
" "	1885–'86; Jan. 13,	14°	"	" "
" "	1886–'87; Jan. 9,	22°	"	All buds killed with exception of Oldmixon, and there were enough uninjured buds of this variety to give a full crop in the fall.
" "	1887–'88; Jan. 23,	22°	"	All killed but Oldmixon.
" "	1892–'93; Jan. 17,	14°	"	There was a good crop of fruit.
" "	1893–'94; Dec. 14,	14°	"	All varieties except Crosby and Oldmixon badly injured, but these bore a good crop.
" "	1894–'95; Jan. 20,	12°	"	A good crop of all kinds.
" "	1895–'96; Jan. 6,	14°	"	All killed.
" "	1896–'97; Feb. 7,	17°	"	All bore a good crop.
" "	1897–'98; Feb. 3,	22°	"	Nearly all killed; small crop.
" "	1898–'99; Jan. 2,	25°	"	Buds killed.
" "	1899–1900; Feb. 3,	14°	"	One-third killed; good crop.
" "	1900–'01; Jan. 20,	14°	"	One-half killed.

From this it will be seen that there were peaches when the thermometer registered 8, 22, 22, 14, 14, 12, 17, 22, 14 and 14 degrees below zero; and that the buds were killed when the thermometer went to 23, 18, 14, 14 and 25 degrees below zero.

One is often asked if it is not after the buds have started in early spring that they are most liable to be injured by the cold. At the south this is probably the case, but in Massachusetts I think it is not, for as far as my experience goes I have never had the fruit buds injured after Feb. 22nd. The nearest I ever came to having them killed after this date was the morning of the 10th of last May, when the thermometer stood at 20°. Peach buds were showing pink with a few flowers just open, but no injury was done. It has always been the severe cold of winter between Dec. 20th and Feb. 22nd that has destroyed the peach buds in my orchard.

That peaches can be grown in this state is an established fact, but I do not think that it will ever become what is called a peach state. Our winters are too cold and it will be only those who have a good location on high ground suited to the peach, who have a natural love for trees and fruit, and who will not get discouraged and give up when the mercury drops to 20° or more belów zero, destroying the crop year after year, that will make the growing of peaches profitable. As I look back to the time when I grew my first peaches I fail to remember one person in my locality, among the many who were induced to plant peach trees by my success, that has not made a failure of peach-growing; and of those who plant peaches in this state I doubt if one in ten will make it pay. I believe in growing peaches in Massachusetts myself but do not believe in it for the majority, and although I am ready to put money into it if I can look after the trees myself I would not risk one cent in peaches if another was to care for the orchard.

Discussion.

The lecturer did not think that Massachusetts would ever raise enough peaches to make it worth while to have a law in regard to yellows. They might have a law to prevent plum wart. Much of the unhealthy condition of peach trees is due to borers and poor culture. One well acquainted with the yellows can distinguish this disease from the effects of borers.

The Crawford's Late peach is too late for some localities in New England, but where it is not it is a most desirable kind.

You want a good healthy growth of well ripened wood; if your trees go into the winter without having the wood ripened they will be more liable to be killed.

The lecturer thought ground South Carolina rock as good as ground bone. The experience of Dr. Fisher at Fitchburg, and the Agricultural College at Amherst is the same. Paris green is liable to injure the foliage; the foliage of the peach is very sensitive. As much harm as good has thus far been done by spraying peaches.

In Worcester it is reported that the buds are all killed. The lecturer thought there will be but a small crop this year.

Plant peaches on high land. They will not pay at the foot of a hill. Fifty years ago the State Board of Agriculture reported that peaches could not be grown as well as they were fifty years earlier.

People had called the lecturer foolish to plant peach trees, but while valuation generally has decreased, his land has increased fourfold. He thought our New England hills, fairly well situated, can be put to no better use than growing apples. It takes eight or ten years to get an apple orchard into bearing, and if you plant peach trees between the rows you can get a better start.

William C. Strong said he found the lecture very interesting and very instructive, but very discouraging. He has visited Mr. Thurlow's peach orchard and found his peaches as fine and luscious as any he ever tasted. He still believes we shall be able to raise fine peaches. Those raised in Massachusetts are better in quality than any brought into the state. At a meeting of the American Pomological Society two years ago he heard the statement that Mr. Morrill of Benton Harbor, Mich., got six thousand dollars for his crop of peaches when all others around him failed. He cultivated very thoroughly until the middle of August. He then sowed oats and allowed them to die down and cover the ground in winter. In the spring they were worked into the ground. The speaker said that he has great faith that some discovery will be made by which we may be able to grow peaches.

The lecturer said that the season at Mr. Morrill's was very unusual. He kept his orchard thoroughly cultivated; he went over it every other day. This retained the moisture of the ground, but it had nothing to do with the hardiness of the trees.

Only men who have a good location and who are born with a love for the business will succeed.

B. W. Barnard, of Grand Rapids, Mich., said that he has an orchard in Michigan in the same latitude as Boston. He has one orchard of three thousand trees and one of four hundred. He cultivates early in the season and ceases in July. One orchard was not cultivated the previous year and the buds went into winter in good condition. In the spring he had a branch examined and found the wood cells about one-third destroyed. If early cultivation is looked after the trees will bear even though the mercury has been as low as thirty degrees below zero.

The lecturer said he had come to the same conclusion in regard to the wood cells, and was glad to hear the same view expressed by some one else. With a cover crop mice are very liable to injure the trees. He does not grow clover in his orchard when there is a crop of fruit, for the trees need all the moisture in the ground. In a season when the trees do not bear he would sow clover or some other crop. You don't want to stop cultivation too soon; if you ripen the wood too soon the buds will start into late growth. It is a delicate question just when to stop. Late summer is a safe time. Get the trees in good condition to go through the winter. Mr. Barnard said that eighteen degrees below zero will kill buds in Michigan.

A lady inquired about spraying with whitewash and the lecturer replied that it keeps the wood cold, which is desirable in the south, but not here. We want to keep it warm. He would plant on high ground where there is a good circulation of air. One year when the fall was warm the buds started. That year the buds were killed at six degrees below zero. Buds are not so likely to be injured when covered with frost.

Varnum Frost had seen hundreds and hundreds of acres set out with peach trees which have all been failures. Many have used spraying mixtures on part of an orchard and have been unable to see any difference. So much science has got into agriculture that it is extremely difficult to raise anything. When he was a boy peach trees were as healthy as forest trees. He thinks so many chemicals have been introduced into the soil that it is upset and discouraged.

The President said he knew little about the yellows until 1840. Before that, peach trees might live to be fifty years old. In late years he has practised growing peaches from stones, getting the stones from a section where the yellows did not exist. Seedling trees would be no better than budded trees if the seed was unhealthy. Get stones from below Virginia or from California and you will have better success. He thinks that each fruit is endowed with a natural term of life, and if continued beyond that the trees are less healthy. The hardest work he ever had in farming was to sell his peach crop about 1850. He went into the market at eight in the morning and had to back up under a gas light till ten at night to sell a load. The lower rows in his orchard near a brook never bore fruit, while from those higher up there was a good crop. He agreed with the lecturer that raising peaches in Massachusetts is uncertain.

Samuel H. Warren said his father had a peach orchard which produced a good crop that sold at fair prices. One tree appeared to be a new early variety and he thought it would be a good plan to take scions from it. In a year or two the trees were all dead from the yellows.

Mr. Frost has a friend in Fitchburg who has a peach orchard of five thousand trees. He buys trees and sets them in grass land. Every fall he buys a hundred tons of hay and puts some around every tree. He winds tarred paper around the trunks to prevent the mice from gnawing and has never been troubled by them. He cuts the tops of trees off when he buys them and rubs off every eye except the low ones. He has his crop near the ground.

The lecturer said that cultivating and mulching amount to the same thing; he means shallow cultivation. Plough very shallow near the trees. Use a cutaway harrow if you begin early in the season. You may begin before the frost is out of the ground. The cutaway harrow does not work well on a hillside. With a spring tooth harrow you can keep the ground level.

Apple trees will do well in newly cleared land and peach trees also, only the work will be greater.

Jacob W. Manning said that in 1853 he gathered eight bushels of Crawford's Late peaches in Burlington and sold them in Boston for $32.00. Twenty thousand bushels were raised one year in Billerica but few were sold. The peach rot came in 1860.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 30, 1901.

A meeting for Lecture and Discussion was holden at eleven o'clock today, Vice-President BENJAMIN P. WARE presiding.

The Committee on Lectures and Publication regret that they are unable to present more than the following abstract, prepared by the author, of the lecture delivered.

INSECTS INJURIOUS TO FRUITS AND VEGETABLES.

BY PROFESSOR H. T. FERNALD, Agricultural College, Amherst.

The lecturer stated that destructive attacks by insects were nothing new, being graphically described in several places in the Bible. During the last century, however, the injuries caused by insects had become more frequent and serious, the reason for which was due to several causes, the first and probably the most important of these being the introduction of injurious forms from other countries. More than seventy of our worst pests of the present day have been introduced from abroad and it is a noticeable fact that their work in this country is more destructive than in their native land. Modern methods of agriculture are also responsible for a portion of the increased loss, the modern tendency to a concentration of crops being distinctly favorable to the rapid multiplication and spread of the insects which feed upon them, while, finally, the great reduction in numbers of our insectivorous birds has removed one of the most efficient means for holding destructive insects in check. He then went on to speak of the scale insects as affecting fruit trees in this country, illustrating his remarks with lantern slide views of the insects described. The oyster-shell scale was shown and its life history briefly sketched. The lecturer stated that it was introduced from Europe during the latter part of the 18th century and is now generally distributed over the country, and while not usually destroying fruit trees is nevertheless very injurious to them. The scurfy scale was also treated of in a similar manner and a

slide showing where parasites had been at work destroying it was put upon the screen. The lecturer next took up the San José scale which, he stated, was by far the most serious scale with which we have to contend at the present time. He further said that it is in all probability a native of Japan and was first discovered in this country in California about 1870. Its life history was fully described and pictures showing its ravages were put upon the screen as was also a map of Massachusetts showing thirty-eight localities where the scale is now known to occur. The speaker stated that during the summer of 1900 he had received currants, pears, and apples so badly affected by this insect as to render them unsalable, these specimens all coming from places within fifty miles of Boston. The best treatment advisable for the oyster-shell and scurfy scales is to spray affected trees twice with kerosene emulsion or with a 10 per cent mechanical mixture of kerosene and water,—once about the 10th of June and again about the 25th of that month. For the San José scale, however, this treatment would be quite ineffective because of its different life history. For this insect the fumigation of all nursery stock before shipment was strongly urged and purchasers of fruit stock were advised to require a certificate of inspection and freedom from the scale with every lot bought, taking due care to note that the date of inspection is within a year of the date of purchase. Fumigation, however, was not recommended for general use because of its expense and the apparatus necessary, but whale-oil soap was suggested in its place, the most successful formula for its preparation being given. The speaker said that if the San José scale increased during the next ten years as rapidly as it had during the last five in this State, it would become a serious question whether any fruit at all could be raised in Massachusetts, and that if they wished to save their orchards the fruit growers of the State would find it necessary to give this insect much attention.

The lecturer then took up the asparagus beetle as an insect causing much trouble to market gardeners and sketched its life history and the best means for destroying it, for which purpose he recommended arsenate of lead. This was followed by a description of the cabbage worm which he said was, in spite of

nearly fifty years' experience with it, one of the most difficult cabbage insects to control. For that purpose he recommended the use of Paris green, explaining why any danger in the use of this insecticide was more apparent than real and stating his experience in its use, and also the practice of the large market gardeners around Philadelphia where this treatment has been followed for fifteen years with excellent results. He closed by urging a more careful study of the insects injurious to crops, stating that the annual loss from this cause was over $300,000,000 each year in the United States and that only a small part of this loss is unavoidable.

The lecture was illustrated throughout by lantern slides.

Discussion.

Hon. Virgil C. Gilman asked whether scraping the bark of apple and peach trees on or before the first of June would destroy scales on the bark.

The lecturer said that the best time to scrape trees is during the winter but this is difficult and ineffectual. Spraying is cheaper and better. Scales on nursery stock and other young trees are found down to the ground, but as the bark grows thicker the old ones retreat.

The Chairman said that ten years ago the orange trees in California were infested with an injurious scale but a parasite has been introduced which has kept the scale in check.

The lecturer said that the scale on orange trees in California is not the San José but one that came from Australia. The San José scale multiplies more rapidly. The lady bird feeds on the San José scale and is a great help to orchard men, but we cannot hope that it will exterminate the San José scale because the latter increases so much more rapidly. The United States Department of Agriculture has sent an agent to Japan to learn what keeps this pernicious scale in check in that country. The tent caterpillar has been known for many years and has never been exterminated, but we have to fight it every year and we have learned that it can be kept down, and we must do the same with the San José scale. There is a possibility of controlling it, but not of exterminating it. The lecturer said that he was called upon to inspect a nursery

in another state, and that he refused a certificate of freedom from the San José scale. The owner sighed and said that he would send the trees to Massachusetts, where there is no law to prevent the introduction of the San José scale.

Varnum Frost said that the experiment stations had cost a good deal of money, and asked if there had ever been an insect during the last hundred years which had destroyed a crop so that there was not enough left to supply the wants of the people. The cabbage worm is a recent introduction, but cabbages are grown in the suburbs of Boston as well as ever. He regarded injurious insects as beneficial by stirring up cultivators to attend to their crops.

The lecturer said that it was impossible to take up all sides of the question in the time allotted to him. Except for insects human life on the earth would be ended in five years. There are good insects and bad insects, as there are good people and bad people. He had not attempted to develop a scare, but had simply stated what had occurred in other states but had not reached Massachusetts because it is so far north. His work was that of forewarning, and the map shows that the pest has already come. It is the people who have it who are making the outcry. Mr. Frost's view in regard to the benefit of insects may be correct, but they are not an unmixed benefit.

The Chairman said that asparagus is fit to cut in forty-eight hours from the previous cutting so that the eggs of the asparagus beetle do not have time to hatch.

The lecturer said that the eggs mentioned require four or five days to hatch, and if the asparagus is cut clean every forty-eight hours there is not time for them to hatch. When cutting ceases and the seed stalks grow up the beetles have their opportunity. Every farmer seems to have some neighbor who is not a good farmer to propagate insects for him.

At the suggestion of the Chairman a vote of thanks to the lecturer was unanimously passed.

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TRANSACTIONS

OF THE

Massachusetts Horticultural Society,

FOR THE YEAR 1901.

PART II.

BOSTON:
PRINTED FOR THE SOCIETY.
1902.

The New Horticultural Hall: Erected A. D. 1900.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, April 6, 1901.

A duly notified stated meeting of the Society was holden at eleven o'clock today, the President, O. B. HADWEN, in the chair.

Ex-President William H. Spooner reported the following memorial of the late Augustus Parker, which was unanimously adopted:

Mr. Augustus Parker of Roxbury, a member of this Society, died on the 27th of February, at the age of seventy-four.

My first acquaintance with Mr. Parker was about the year 1856, when he was engaged in the coal business, but his predominating taste was for farming, for which he had an early training and to which he subsequently turned his entire attention.

His farm was a portion of the Seaver estate near Grove Hall, and he managed it skilfully, making its products desirable to many purchasers.

His grandfather, Hon. Nathaniel Seaver, with whom he lived from early childhood, brought scions of the Seckel pear from Washington (while a member of Congress) with which he grafted a tree standing on the old place on Blue Hill Avenue.

Mr. Parker continued farming until the growing demand on his lands for residential purposes induced him to sell.

He was much interested in local history and genealogical research.

He became a member of the City Council of Boston in 1875, and was a member of the Board of Overseers of the Poor from 1878 to 1880.

He was elected a corporator of the Franklin Savings Bank in January, 1877; also a trustee and member of the Board of Investment, and later Vice-President, and succeeded Hon. F. W. Lincoln as President in February, 1898.

He was elected a member of this Society in 1849, and was a Vice-President in 1893, '94, '95, and '96.

The Committee on Lectures and Publication reported a deficiency of five dollars in the appropriation for their use, and asked for an additional appropriation of that amount, which was voted, subject to the approval of the Executive Committee.

The Secretary read a letter from the Secretary of the Society of American Florists, stating that one Silver and one Bronze Medal had been appropriated by that Society to be awarded through the Massachusetts Horticultural Society, at one of their regular public exhibitions, for new and meritorious plants of American origin, but only to such exhibits as are considered worthy of such an award.

The offer was accepted and the thanks of the Society were voted therefor and the communication was referred to the Committee on Prizes to be put in proper form.

Henry L. Clapp, Chairman of the Committee on School Gardens and Children's Herbariums, stated that that Committee were unable to attend to the work of awarding prizes for Native Plants, and offered the following vote:—

Voted, That the work of judging native plants and awarding prizes therefor be referred back to the Society for reassignment to some other Committee now existing, or to some committee who may be hereafter appointed.

H. L. Clapp, *for the Committee on School Gardens and Children's Herbariums.*

This vote was laid on the table, and the subject was referred to a Committee consisting of Mr. Clapp, Charles B. Travis, and Mrs. H. L. T. Wolcott to consider and report upon.

The President reported the following recommendation from the Executive Committee, —

Recommendation to the Society,

Voted, That the consideration of the ultimate disposition of the statues now on the outside of the present building be postponed for the present, and that the removal of them and their temporary deposit be left to Mr. Wheelwright, the architect, and the Building Committee, with full powers.

This recommendation was adopted.

The following named persons, having been recommended by the Executive Committee for membership in the Society, were on ballot duly elected:

PETER FISHER, of Ellis,
MISS ABBY A. BRADLEY, of Hingham,
MISS MARY F. BARTLETT, of Boston.

On recommendation of the Executive Committee

GEORGE FRANCIS ATKINSON, Professor of Botany in Cornell University, Ithaca, N. Y., and
PROFESSOR L. WITTMACK, Secretary of the Royal Prussian Horticultural Society, Berlin, Prussia,

were elected Corresponding Members of the Society.

The meeting adjourned to Saturday, May 4, at such place as might be provided.

BUSINESS MEETING.

SATURDAY, May 4, 1901.

An adjourned meeting of the Society was holden today at eleven o'clock, at No. 227 Tremont Building, Boston, the President, O. B. HADWEN, in the chair.

The following vote offered by the Treasurer was passed:

Voted, That the rate of interest to be credited annually to the J. D. Williams French Fund, for the purchase of books for the Library, be at the rate of four per cent.

A letter from William Wallace Lunt, Chairman of the Committee on Plants, resigning that position on account of business engagements, was read. It was voted that Mr. Lunt's resignation be accepted, with regret that he feels it necessary.

On motion of Ex-President William H. Spooner it was

Voted, That the Committee on Plants be authorized to recommend candidates to fill the vacancies in the Committee and in the Chairmanship.

The President, as Chairman of the Executive Committee, reported that that Committee had approved the appropriation of five dollars voted by the Society at the April meeting to cover the deficiency in the appropriation for the Committee on Lectures and Publication.

Henry L. Clapp, Chairman of the Committee to consider the subject of awarding prizes for native plants, made a report which was accepted, and on motion of William H. Spooner it was voted that Charles W. Jenks be a Committee to award prizes and gratuities for native plants with the liberty to call in the assistance of such experts as he may desire.

A letter was received from W. Prentiss Parker, acknowledging, in behalf of his mother and sisters, as well as himself, their grateful appreciation of the memorial of the late Augustus Parker adopted by the Society.

A circular was received from the President and Secretary of the American Pomological Society, with the information that the Twenty-Seventh Biennial Session of that Society will be held at Buffalo, N. Y., on the 12th and 13th of September, and inviting the attendance of delegates and the contribution of fruits to the exhibition, and additions to the membership of the Society.

A letter was received from George Francis Atkinson, Professor of Botany in Cornell University, Ithaca, N. Y., acknowledging receipt of the information of his election as Corresponding Member of this Society, and expressing his appreciation of the honor conferred upon him.

The following named persons, having been recommended by the Executive Committee for membership in the Society, were on ballot duly elected:

THOMAS E. PROCTOR, of Boston,
MISS MARY D. BATES, of Ipswich,
MRS. AUGUSTUS P. GARDNER, of Hamilton.

Adjourned to Saturday, June 1.

BUSINESS MEETING.

SATURDAY, June 1, 1901.

The meeting of the Society on the 4th of May adjourned to today, but there was no quorum present and the meeting was dissolved.

BUSINESS MEETING.

SATURDAY, July 6, 1901.

A duly notified stated meeting of the Society was holden at eleven o'clock today, the President, O. B. HADWEN, in the chair.

A report was received from the Committee on Plants, nominating Arthur H. Fewkes for Chairman, and Robert Melrose Grey to fill the vacancy on the Committee, and these gentlemen were unanimously elected.

The Secretary announced the receipt of a letter from Professor L. Wittmack, Secretary of the Royal Prussian Horticultural Society, Berlin, acknowledging his election as a Corresponding Member of this Society, and thanking the Society therefor; also a letter from Ralph D. Cleveland of Hinsdale, Illinois, acknowledging with thanks the expression by the Society of respect and esteem for his father, the late H. W. S. Cleveland.

The question of holding or omitting the weekly summer exhibitions of the Society was brought up, and after full discussion it

was voted to omit all exhibitions until the Annual Plant and Flower Show on the 4th and 5th of September.

On motion of Henry L. Clapp it was unanimously voted that this Society endorse the object of the Society for the Protection of Native Plants.

William C. Strong stated the arrangements made for the meeting of the American Pomological Society at Buffalo, N. Y., on the 12th and 13th of September, and urged the attendance of as many members as could make it practicable to visit that and the Pan-American Exposition. It was voted that the Secretary receive the names of such members as would attend as delegates, and that he also notify members of the opportunity.

Joseph H. Woodford, from the Committee to prepare a memorial of the late Edwin C. Lewis of Taunton, made a report which was unanimously accepted, and it was voted that it be entered on the records of the Society, and that a copy be sent to the family of Mr. Lewis.

The following is the memorial :—

Whereas, we have learned with great sorrow that our friend and fellow member of our Society, Edwin C. Lewis of Taunton, has been taken away from us by death, we desire to record our deep sense of the loss we have sustained; therefore be it resolved, that in his decease we recognize the passing away of a man of admirable character, whose nature was strongly marked by the qualities of earnestness, sincerity, good faith to his employer, kindliness of soul and geniality of disposition; and be it further resolved, that in his long and successful career as a tiller of the soil he always illustrated the best type of a gardener and farmer, and that the example which he has set of fidelity to his calling is one we may desire to emulate; and be it further resolved, that our heartfelt sympathy be extended to his family and friends, and that a copy of these resolutions be spread on the records of our Society, and be transmitted to his bereaved family.

WARREN H. HEUSTIS,
PATRICK NORTON,
J. H. WOODFORD. } *Committee.*

The following named persons, having been recommended by the Executive Committee for membership in the Society, were on ballot duly elected:

ALBERT L. MURDOCK, of Boston,
LORING UNDERWOOD, of Belmont,
SYLVESTER TOWER, of Boston,
MISS C. M. WALKER, of Boston,
JOSIAH B. SHURTLEFF, JR., of Revere,
MRS. HELEN M. TOWER, of Cambridge,
ALFRED RICHARD CROSS, of Nantasket.

Adjourned to Saturday, August 3.

BUSINESS MEETING.

SATURDAY, August 3, 1901.

An adjourned meeting of the Society was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

Agreeably to the Constitution and By-Laws the President appointed the following named members a Committee to nominate candidates for Officers and Standing Committees for the year 1902:

WILLIAM C. STRONG, *Chairman*,

WILLIAM H. SPOONER,	PATRICK NORTON,
FRANCIS H. APPLETON,	BENJAMIN C. CLARK,
BENJAMIN P. WARE,	MRS. E. M. GILL.

The Secretary read a letter from N. L. Britton, Ph. D., Chairman of the Council of the Horticultural Society of New York, inviting this Society to participate in an International Conference on Plant Breeding and Hybridization during the year 1902, probably during the month of September. It was voted to accept the invitation.

The Secretary also read a letter from Mrs. Jane Lewis, thanking the Society, on behalf of herself and her family, for its expression of sympathy in the loss of her husband, the late Edwin C. Lewis.

Adjourned to Saturday, September 7.

BUSINESS MEETING.

SATURDAY, September 7, 1901.

An adjourned meeting of the Society was holden at eleven o'clock today. In the absence of the President and all the Vice-Presidents, Ex-President SPOONER was called to the chair.

Ex-President William C. Strong, Chairman of the Committee to nominate candidates for Officers and Standing Committees of the Society for the year 1902, reported a printed list, which was accepted. The Committee was continued and requested to nominate candidates in place of any who might decline before the election.

Mr. Strong also reported the following list of delegates to the Twenty-Seventh Biennial Session of the American Pomological Society, to be held in Buffalo, N. Y., September 12th and 13th:

The President, O. B. HADWEN, *Chairman*,

WILLIAM C. STRONG,	WILLIAM H. SPOONER,
BENJAMIN P. WARE,	WARREN FENNO,
JAMES H. CLAPP,	J. WILLARD HILL,
JACOB W. MANNING,	JOHN L. BIRD,
THOMAS C. THURLOW,	FREDERICK W. DAMON,
EDWARD B. WILDER,	CHARLES B. TRAVIS,
AARON LOW,	JAMES H. BOWDITCH,
PATRICK NORTON,	HENRY W. WILSON,
E. W. WOOD,	ARTHUR H. FEWKES.
CHARLES F. CURTIS,	

The report was accepted and it was voted that the Secretary be authorized to add to the list the names of any other members who would like to go as delegates.

After considerable discussion as to whether the new building would be accepted by the Society in time to hold the Annual Election, which occurs on the 5th of October, it was

Voted, That the Treasurer shall have full power, in case the new hall in not in readiness to hold the Annual Election, to provide another suitable place to hold the election.

It was also *Voted*, That the Superintendent of the Building and the Librarian be instructed not to remove any of the personal

property of the Society into the new building until they have received written instruction to do so from the Building Committee.

The meeting then adjourned to Saturday, the 14th instant.

BUSINESS MEETING.

SATURDAY, September 14, 1901.

An adjourned meeting of the Society was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

Certain legal questions connected with the care and drainage of the alleyway between the land of the Society on Huntington Avenue and that of the Proprietors of Chickering Hall, were brought before the meeting and it was

Voted, That when the Society adjourns it be to Saturday next, the twenty-first instant, at eleven o'clock, for the consideration and decision of these questions, and that notice be given by postal card to every member of the Society of the meeting and its purpose.

It was also *Voted*, That the Building Committee be requested to present their report at the meeting on Saturday next, and that the subject of the acceptance of the new building be then acted upon.

Ex-President Francis H. Appleton was appointed a Committee to prepare a memorial of the late George A. Nickerson.

The meeting then adjourned to Saturday, September 21, at eleven o'clock.

BUSINESS MEETING.

SATURDAY, September 21, 1901.

An adjourned meeting of the Society was holden today at eleven o'clock. Notice of the meeting had been giving by mailing a postal card to every member. The chair was occupied by the President, O. B. HADWEN.

Francis H. Appleton, Chairman of the Building Committee, read the draft of an agreement between the Society, and William H. Hill, R. Stuart Chase, and Charles H. W. Foster, Trustees under the will of William H. Hill, and offered the following vote:

Voted, To authorize the Treasurer of the Massachusetts Horticultural Society to execute in the name of the Society an agreement between it and William H. Hill, R. Stuart Chase, and Charles H. W. Foster, Trustees under the will of William H. Hill, in regard to the use and maintenance of the passageway created for the benefit of the estates of the two parties to the agreement and to cause the corporate seal of the Society to be affixed thereto.

The passage of this vote was moved by Ex-President William C. Strong, and seconded by William H. Spooner, and after full consideration it was passed by a unanimous vote in the affirmative.

The Chairman of the Building Committee then read the report of that Committee, and presented the following vote and moved its passage:

Voted, That the Society accepts the new building on Massachusetts Avenue, with the provision that the contractor shall not be given formal acceptance until the Society's interests can be fully protected.

This motion was seconded by William H. Spooner and discussed by Mr. Strong, Mr. Spooner, and the President of the Society, inquiries being answered by the Chairman of the Building Committee, and carried in the affirmative.

The meeting was then dissolved.

BUSINESS MEETING.

SATURDAY, October 5, 1901.

A Stated Meeting of the Society, being the Annual Meeting for the choice of Officers and Standing Committees, was held * at eleven o'clock today, the President, O. B. HADWEN, in the chair.

The Secretary stated that the notice of this meeting required by the Constitution and By-Laws had been duly given.

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* At Wesleyan Hall, Bromfield Street.—Ed.

On motion of Edwin H. Jose, duly seconded, it was voted that the Report of the Committee on the Revision of the Constitution and By-Laws, presented at the Stated Meeting on the fifth of January and then postponed to this meeting, be taken up.

Theodore H. Tyndale moved that the Committee on the Revision of the Constitution and By-Laws be discharged, and that the consideration of their Report be indefinitely postponed. This motion was duly seconded and carried.

Joseph H. Woodford moved the reconsideration of the last vote. This motion was duly seconded and reconsideration was refused.

The President here retired and called to the chair Vice-President Benjamin P. Ware.

Ex-President William C. Strong reported from the Executive Committee a recommendation that the opening of the New Hall be celebrated by an address or addresses during the coming Chrysanthemum Show. The report was accepted, and the President and Ex-Presidents Strong and Spooner were appointed a Committee to make arrangements for the celebration.

The President, as Chairman of the Executive Committee, presented a report from that Committee, recommending the appropriation of $6,000 to cover the deficiency in the amount previously appropriated for the Building Committee. This appropriation was voted.

Agreeably to the Constitution and By-Laws the Chair appointed Hon. Aaron Low, Charles W. Jenks, and Edwin A. Hall, a Committee to receive, assort and count the votes given for Officers and Standing Committees for the year 1902, and report the number. The polls were opened at a quarter past eleven o'clock.

Charles E. Richardson, Treasurer, moved the following vote:

Voted, That the Treasurer be, and he hereby is, authorized to execute, in the name of the Massachusetts Horticultural Society, an agreement between it and William H. Hill, R. Stuart Chase and Charles H. W. Foster, Trustees under the will of William H. Hill, in regard to the use and maintenance of the passageway created for the benefit of the two parties to this agreement, and to cause the corporate seal of the Society to be affixed thereto.

The vote was passed in the affirmative.

The following named persons, having been recommended by the Executive Committee for membership in the Society, were on ballot duly elected:

HENRY BIGELOW WILLIAMS, of Boston,
MISS ELLA F. HILDRETH, of Lowell,
MISS MARY ALMA COE, of Boston.

The polls were closed at quarter past one o'clock, and the Committee to receive, assort and count the votes given, and report their number, reported that the whole number of ballots cast was ninety-one, and that the persons named on the ticket presented by the Nominating Committee had a plurality of votes and were elected, except that Arthur F. Estabrook was elected a member of the Finance Committee in place of Charles S. Sargent.

The report was accepted, and the persons reported by the Committee as elected were, agreeably to the Constitution and By-Laws, declared by the presiding officer to have a plurality of votes, and to be elected Officers and Standing Committees of the Society for the year 1902.

Adjourned to Saturday, November 2.

BUSINESS MEETING.

SATURDAY, November 2, 1901.

An adjourned meeting of the Society was holden at eleven o'clock today, the President, O. B. HADWEN, in the chair.

The President, as Chairman of the Executive Committee, reported from that Committee a recommendation that the Society appropriate the following named sums for Prizes for the year 1902:

For Plants	$1,750.00
" Flowers	2,187.00
" Native Plants	153.00
" Fruits	1,487.00
" Vegetables	1,050.00
" Gardens	438.00
Total	$7,065.00

These amounts being twelve and one-half per cent less * than those appropriated for the year 1901.

The President further reported from the same Committee a recommendation that the Society appropriate $250 for the Committee on Lectures and Publication for the year 1902, this sum to include the income of $50 from the John Lewis Russell Fund.

The report was accepted, and, agreeably to the Constitution and By-Laws, laid over until the Stated Meeting on the first Saturday in January.

It was voted that any further furnishing of the Library Room, with either bookcases or other furniture, be entrusted to the Library Committee.

On motion of Ex-President William H. Spooner it was voted that the Building Committee be requested to furnish a detailed statement of the cost of the new building.

GRENVILLE T. W: BRAMAN of North Cohasset, having been recommended by the Executive Committee for membership in the Society, was on ballot duly elected.

Adjourned to Saturday, December 7.

BUSINESS MEETING.

SATURDAY, December 7, 1901.

An adjourned meeting of the Society was holden at eleven o'clock today, the President, O. B. HADWEN, in the chair.

In the absence of the Secretary by reason of illness, Miss Charlotte M. Endicott was appointed Secretary *pro tem.*

Warren H. Heustis, Chairman of the Committee on Vegetables, read the Annual Report of that Committee.

The report of J. Woodward Manning, as Chairman of the Committee on Flowers, was read by the Secretary *pro tem.*

*This reduction was later restored on recommendation of the Executive Committee, making the appropriation for 1902, $8,075.—Ed.

Arthur H. Fewkes, Chairman of the Committee on Plants, read the Annual Report of that Committee.

William E. Endicott, Chairman of the Committee on the Library, read the Annual Report of that Committee.

These reports were severally accepted and referred to the Committee on Publication.

The Schedule of Prizes for the year 1902 was reported by William H. Elliott, Chairman of the Committee on Establishing Prizes, accepted, and referred to the Committee on Publication. A printed statement of the changes from the Schedule of 1901 was also presented.

William H. Spooner moved that when the meeting adjourned it should be for two weeks, in order that Committees which had not yet presented their reports be given further opportunity in which to read them. This motion was carried.

Patrick Norton, Chairman of the Committee on Gardens, announced that the report of that Committee would be presented at the next meeting.

William C. Strong presented the following memorial of Thomas Meehan:

It is with deep regret that the Massachusetts Horticultural Society learns of the death of Thomas Meehan, of Philadelphia, on the 19th of November last. For nearly half a century our members have had constant fellowship with him in the various departments of horticulture in which he distinguished himself. He first became known to us as a nurseryman, the late William Saunders being his partner, until his transfer by the United States Government.

Subsequently Mr. Meehan was the sole proprietor of one of the most varied and extensive nurseries in the United States, bringing his sons into training in the latter years of his life.

In addition to the vast amount of care involved in this enterprise he early took upon himself the founding of the "Gardener's Monthly," which he edited and published with signal ability for twenty-nine years, it being the leading periodical for nurserymen and gardeners. After the multiplication of periodicals devoted to the florists' and nurserymen's trade, Mr. Meehan changed the character of his Monthly, making it eminent in illustrations of native plants, in botanical descriptions, and in notes in the varied departments of landscape and horticulture.

In the midst of the enormous demands of these business enterprises, Mr. Meehan found time to gratify his love and his genius for botanical research and he attained such proficiency that he became the valued correspondent of the late Professor Asa Gray and other experts in this country and in Europe. He was elected a Corresponding Member of this Society in 1869.

His mind was surprisingly alert to discover the secrets of nature, and to reveal the infinite wisdom of the Creator.

And to all this multiplicity of labor he yet added eminent service as a good citizen, jealously guarding the interests of the great city of Philadelphia for many years with signal skill and credit. The parks of that city bear witness to his wisdom. To few men have been given the privilege and the high honor of doing so much for the welfare of his fellowmen. We honor his memory; we mourn his loss.

To the family of the deceased we extend our sincere sympathy, while we congratulate them upon the rich inheritance they have received in his noble and honored life.

It was voted that this memorial be accepted and adopted.

On motion of William H. Spooner it was voted that the Society tender the use of its halls to the State Board of Agriculture on the occasion of its Semi-Centennial next July.

On motion of William C. Strong it was voted that the Committee of Arrangements be instructed that exhibitions which are open on Sunday shall be free on that day.

Charles Scully of Norwell,

having been recommended by the Executive Committee for membership in the Society, was on ballot duly elected.

Adjourned to Saturday, December 21.

BUSINESS MEETING.

Saturday, December 21, 1901.

An adjourned meeting of the Society was holden today at eleven o'clock, the President, O. B. Hadwen, in the chair.

E. W. Wood, Chairman of the Fruit Committee, read the Annual Report of that Committee, which was accepted and referred to the Committee on Publication.

Patrick Norton, Chairman of the Committee on Gardens, said that the report of that Committee was not ready but would certainly be at the January meeting and that the amount appropriated for that Committee was $500, of which $420 was awarded.

Further time was granted the Committee to prepare their report.

It was voted that reports of Committees not yet ready go over to the January meeting, and that the Secretary notify the Chairmen of such Committees to have them ready at that time.

J. Woodward Manning, Chairman of the Committee on Flowers, said that the Committee had under consideration the award of the Prospective Prize, which might increase the amount awarded by $30. He added that the amounts offered for Prizes for Flowers had not for two or three years exceeded the amount offered. This year the amount offered was $300 less than the amount appropriated.

It was voted that the offer in the Schedule of Prizes for Timber Trees be changed to correspond to the law of the Commonwealth requiring this prize to be offered.

Robert Manning read his Annual Report as Secretary and Librarian. The statement therein as to the insufficient width of the shelves provided by the Building Committee led to some remarks on that subject by Ex-Presidents William C. Strong and William H. Spooner, and William E. Endicott, Chairman of the Library Committee. It was finally left to the Library Committee to consider and report what changes are in their opinion necessary in the Library Room, with an estimate of their cost.

The subject of charging an admission fee on Sunday to such exhibitions as are kept open on that day was discussed, as also its legality, but no action was taken.

The meeting was then dissolved.

REPORT

OF THE

OPENING FLOWER SHOW.

HELD UNDER THE AUSPICES OF THE BUILDING COMMITTEE

JUNE 3-13, 1901.

By GEN'L FRANCIS H. APPLETON, CHAIRMAN.

Upon request, and in order to record in the Society's Transactions some account of the Flower Show of June, 1901, the undersigned has undertaken to do so by a few preliminary remarks followed by quotations from published articles which seem to him to be appropriate.

No attempt is made to catalogue the many plants there shown, as the press reports of that time furnished good records of the Show. It was originally intended that the Flower Show at Horticultural Hall should open on May 29, 1901, but the cold storm of the 19th having delayed the blossoming of many of the rarest flowers which were to be a part of the Show, it was found necessary to postpone that date to June 3 and close on the 13th, which was a continuance of a few days beyond the time originally selected. It was thought that so choice a display ought to be prolonged, and the owners of the many specimens kindly assented.

It is not possible to fully appreciate the amount of work accomplished by Professor Sargent, who planned the disposition of the exhibits and into whose care the owners so loyally placed such a vast number of valuable specimens, in their readiness to co-operate in promoting knowledge of a high standard of horticulture. From the time when Professor Sargent undertook to direct the future Show, until the hour when the last plant was safely in the

keeping of its owners, he was untiring in the efforts which resulted in so great a success.

The upper stories of the new Horticultural Hall had not been completed when the Flower Show of June 3–13, 1901, was opened, the Library being dedicated with due ceremony on November 9, following.

The Flower Show was not an exhibition where competition took place nor one at which money and medals were to be distributed, but was a great exhibit of what the wealth of capital in money and intelligence with loyal public spirit can do to promote interest in horticulture, and give a vast amount of pleasurable education to the people of Boston and those of other cities and towns in Massachusetts.

This Show was as choice in its line as has ever been within our reach or possibility. The lecture hall had then a floor of rough boards; the grand exhibition hall had an earth floor artistically divided by gravel walks into large beds in which exhibits were made with superb color effects. The small hall had its cement floor with facilities for quick drainage of the surplus water used for the orchids. The total effect in each hall and in the approaches thereto was superb.

The question of opening the Show on Sunday was before the management and was considered broadly and with great care. In order that all should have full opportunity to examine and study the plants and flowers it was decided to keep the show open at appropriate hours on Sunday at reduced rates.

The hours selected for opening and closing were 10 A.M. to 10 P.M. on week days and 1 P.M. to 10 P.M. on Sundays.

Favorable opportunities for visiting the exhibition, under suitable rules and at nominal rates, were extended to the school children of Boston and neighboring cities, as well as to the national conference of the Young Men's Christian Association then in session in Boston.

The electric light, telephone, and street railway officials gave us their aid in rearranging their street wires and in completing the out of door surroundings to our advantage as far as possible. To the Police Commissioners we are indebted for courteous co-operation and assistance.

While the Society gave the free use of the halls, the manage-

ment of the Show was held responsible for the financial results. Of the current expenditures on account of the Show, about one thousand dollars' worth of property was left in the possession of the Society as permanent additions to its plant.

A notable feature of the occasion was the day when that distinguished horticulturist, the constant friend and supporter of horticulture, Mr. H. Hollis Hunnewell, recovering from a severe illness, came from his estate in Wellesley to inspect and enjoy the Show.

The photograph then taken, which represents him in company with Mr. Sargent, sitting in the grand hall surrounded by the rare and beautiful specimens from his own and other estates, should be enlarged and preserved in our halls.

The Press of Boston and throughout Massachusetts came loyally to our aid in making known to the citizens of our Commonwealth, that choice types of horticulture were to be displayed in the new halls for their enjoyment, and much writing was done to promote the knowledge of what the Show would be, and to further its success.

The display made was evidently highly appreciated and most beneficial from an educational standpoint. The absence of competition for prizes was looked upon by many as a commendable feature, and the quality and quantity of the exhibition was certainly not lowered by its absence.

The awards that came from words of high praise in the Press were indeed Certificates of Merit that must have been highly prized by exhibitors. The modern method now being adopted by some associations and societies, of extending encouragement in the form of Certificates of Merit for marked excellence, should be carefully considered as to its promotive value.

For the real report of this June Flower Show I prefer to take the ex-parte statements of the Boston Press and select the following description of the exhibition from the Boston Transcript of June 4, 1901.

In the history of American horticulture the opening exhibition of the Massachusetts Horticultural Society in its new hall on the corner of Massachusetts and Huntington Avenues, now in progress, marks the highest point yet reached in floral displays in this country. The exhibition opened last evening at eight o'clock and all the evening the hall was thronged with flower lovers. There was no diminution in the attendance

this morning and half an hour after the exhibition was opened, at ten o'clock, there was a crowd that occupied all the aisles of the three flower-filled halls.

Entering the spacious vestibule, with its tiled ceilings, the visitor to the show turns to the right and enters the lecture hall. The eye is caught first by a splendid collection of wistarias of the purple variety, from the greenhouses of Professor Charles S. Sargent of Brookline, who has been the moving genius of the exhibition, and to whom is due the credit for the arrangement and plan of the exhibition. These are on the left artistically grouped, and on the right are long benches of gloxinias interspersed with adiantum farleyense to hide the pots, and forming a bewildering and kaleidoscopic group of colors.

Three white wistaria plants are ranged above this exhibit, and on the Huntington Avenue side of the hall is a bench of pelargoniums in rich bloom. The gloxinias are from the Sargent, Hunnewell, and Sprague estates and the pelargoniums are from the Hunnewell and Weld greenhouses. On the stage at the end of the hall is the finest specimen in America of the palm known as licuala granda from the estate of H. H. Hunnewell in Wellesley. On either side of this are graceful palms of the areca lutescens variety, and with a bank of amaryllis and lilium longiflorum, the effect is superb. In either corner of this hall are magnificent bay trees from the Italian gardens of Mrs. Charles F. Sprague of Brookline, the pots being masked by beautiful hydrangeas of immense size from the Sargent estate.

In the loggia between this hall and the main exhibition hall are arranged several plants of the rhyncospermum jasminoides, commonly miscalled jasmine, and bearing thousands of delicate white blossoms between their shiny green leaves. The effect of the view of the main hall from this point cannot be surpassed. It is one glorious blaze of color.

The plants which are used here are azaleas, rhododendrons and palms, and these have been arranged with the highest art by Professor Sargent assisted by Miss Beatrix Jones, the landscape gardener, so that they appear as if growing in a garden. At the right from this vantage point is seen a bank of Indian azaleas of the white and pink varieties, with here and there a sport showing in the snow-white bloom. On the left are the red and rose varieties of azaleas massed to show to the best advantage with borders of turf to complete the garden effect. Some of these plants are thirty years old and show the effect of the highest cultivation.

In the centre of the hall with pots sunken below the level of the turf are thirty-three splendid azaleas, one of the finest being a rose variety known as Marie Verschaffelt. The azaleas are from the private greenhouses of Professor Sargent. At the end of this hall is a splendid bank of rhododendrons from the Hunnewell estate, where rhododendron culture has been carried to the highest point reached in this country. All around the hall is a background of palms from the Ames, Sargent, and Hunnewell estates. The orchid collection which is in the small hall leading off from the main hall is the best ever gathered in America and conveys some

ideas of the richness of the private greenhouses in Boston and its vicinity. The largest exhibitor is Mrs. F. L. Ames of North Easton and others who have contributed are E. V. R. Thayer of South Lancaster, W. P. Winsor of Fairhaven, J. S. Bailey of West Roxbury, H. H. Hunnewell of Wellesley, Mrs. C. F. Sprague, J. E. Rothwell and Dr. C. G. Weld of Brookline. They were arranged with the highest of artistic skill by W. N. Craig the gardener of the Ames estate . . . There are in this hall about a thousand orchids including many rare and choice varieties. Of the cypripediums there are fifty varieties and there are about three hundred cattleyas. . . . In addition to the orchids more than a thousand adiantums and five hundred palms ranging from a few inches to fifteen feet in height have been used for decoration.

During the Show the Boston Cadet Band furnished excellent music afternoons and evenings which attracted people who might not otherwise have derived pleasure and profit from this wonderful combination of the horticulturists' skill.

DEDICATION OF THE NEW BUILDING

OF THE

MASSACHUSETTS HORTICULTURAL SOCIETY.*

On the morning of the ninth of November, 1901, the new building of the Massachusetts Horticultural Society on Massachusetts Avenue was formally dedicated. The exercises were held in its spacious library. The annual Chrysanthemum Exhibition was in progress in the Exhibition halls and its brilliant display had attracted a large number of interested spectators.

Vice-President Benjamin P. Ware called the assembly to order and announced that, owing to the sudden death of the President's wife, Mr. Hadwen could not be present; his absence to be regretted in any case was far more so today.

He said that on this occasion when the Society is holding such an important show, marking a milestone in its annals, it should recognize the relation that the Society's work bears to the work of the divine Creator. The God-given talent of cultivation has resulted in a development of flowers infinitely superior to the products of unaided nature. The same has been true in all other lines of our work.

Mr. Ware then called upon Rev. Edward Everett Hale for prayer as especially appropriate to the dedication of such a temple.

Dr. Hale in an earnest prayer invoked the divine blessing upon the work of the Society and dedicated this temple of horticulture to the Creator of all life.

Mr. Ware said that this is the fourth home of the Society, marking a great transition from its first home, a room on North Market Street. The value of having a home where the books of the library, which could not be replaced, can be safely stored is

* With the exception of the Addresses of President Hadwen and Ex-President Appleton this chapter has been compiled from the very full descriptions of the dedicatory exercises published in the Boston Transcript, the Boston Globe and the Boston Herald of November 9, 1901.—Ed.

inestimable. The progress of horticulture can best be demonstrated by looking at the splendid exhibit in the halls below, an exhibition which has never been surpassed in this State.

Hon. James L. Myers, Speaker of the Massachusetts House of Representatives was then called upon. He said that an exhibition such as this was one of the timekeepers of human progress, as President McKinley said of the Exposition at Buffalo, and then read from the Blue Book of 1829 showing the granting of a charter to the Society.

He spoke of the annual exhibitions as successive steps of progress and remarked upon the great benefits that all classes of people have derived from the work of this Society, and expressed a belief in the great measure of influence and usefulness that would go out from this hall and this library in the years before us. On behalf of the State he extended his earnest and warm congratulations.

A letter from Congressman Wm. H. Moody regretting that on account of a previous engagement, he could not be present to represent the nation was read, but Mr. Ware said that there was present a gentleman who represented the cause of humanity everywhere and called upon the Rev. Edward Everett Hale.

Dr. Hale made as usual a felicitous address. He said that if he should say all he felt like saying most of his hearers would wish they had brought a luncheon.

He then told of the work done by hundreds of children in Genesee Street at the South End, and how eager the people were to get the window-boxes that were provided, and how, when fall came and the gardens died, planting bulbs for spring was thought of.

He said that he wrote to the Department of Agriculture in Washington stating that he appreciated the work they were doing in North Dakota and Idaho and Nevada, but he wanted to know what they proposed to do for the benefit of agriculture in Genesee Street and then he told them what bulbs he wanted and he got them and the children up in that street are planting them today.

He wished to emphasize the necessity of being in the open air, a doctrine which he had preached at all times and which he should always go on talking about. It is one of the cardinal rules of good living.

Mr. Ware then introduced General Francis H. Appleton who made the principal address of the day, speaking as follows:

MASSACHUSETTS HORTICULTURAL SOCIETY: HISTORY OF THE SEED SOWN EARLY FROM WHICH THE MASSACHUSETTS HORTICULTURAL SOCIETY HAS DEVELOPED.

Mr. President, Members and Guests:

The date of origin of the Massachusetts Horticultural Society may be given as February 24, 1829, that being the day when the first formal action was had at a meeting of prominent horticulturists of Boston and vicinity. Measures were then taken looking to a permanent organization, and an adjournment was made to March 17, ensuing, when a constitution and by-laws were adopted and complete organization was affected by choice of a board of officers.

This was not a result suddenly arrived at; it might be said that many preliminary meetings extending through years had led up to it. Among the acts or events which may be described as preliminaries — though, indeed, not so intended — were the establishment and maintenance, during the preceding period of twenty-five years or more, as a matter of individual enterprise on the part of citizens in eastern Massachusetts, of numerous fine gardens of fruits and flowers. A like-mindedness in taste and enterprise would certainly be promotive among such of a degree of fraternization, active and cordial as proximity or opportunity might permit, and leading very easily though gradually to organization and coöperation.

Indeed, some note of preparation may be found in the records of horticultural endeavor in the earliest periods—those of the colony and the province and these manifestations became more frequent and more elaborated during the years of prosperity following upon the establishment on firm foundations of the government of the Union after the war of the Revolution had ceased.

The distinction *now* made and emphasized between the affairs or the products of agriculture and horticulture was not recognized by the former generations. All was considered under the

head of agriculture. Even at this day, in the administration of the government at Washington, all matters relating to the tilling of the surface of Mother Earth are classed as agriculture, and the department of bureaus and divisions which comprises those interests in which our society is concerned is officially called the Department of Agriculture.

Governor Winthrop, at Ten Hills farm in Charlestown and Governor Endicott at Salem, were extensive growers of young fruit trees and dealt in them as commodities, supplying their neighbors and fellow colonists; and Governor Prince of Plymouth Colony in an humbler way but in some fashion, seems to have been a promoter of horticulture there. It cannot be doubted that the doings of these Governors proved exemplary and called out not merely praise but imitation.

Of gardens which can be characterized as of fame but few are mentioned by the writers of these early times. It may be permissible, however, to refer to two, of which this may be said, that the respective situation of each was, probably, in sight from the point where we are now assembled.

One was the earliest of which Massachusetts has any record, the garden of William Blackstone on the westerly slope of Beacon Hill. On his departure for Rhode Island he was sufficiently paid for his garden by the local authorities, and, as money was a matter of high consideration in those times, we may well believe that his successors in the ownership and control of the garden, whom he called the "Lord Brethren," carefully fostered and preserved it.

In Governor Winthrop's day a garden was set apart for him and his successors by the General Court on one of the upper islands of the harbor, which then had the name bestowed upon it of "Governor's Garden." The name has come down to these times as "Governor's Island." It was proposed to have a vineyard and an orchard there, the product, in part, to go towards the Governor's salary.

At first a hogshead of wine was specified, but the grapes probably failed in that bleak situation, and, in the year 1640 the rent or what perhaps may be called the "royalty," was reduced to two bushels of apples, one for the Governor and one for the General Court.

Among the orders adopted in England by the Massachusetts Company, in anticipation of the migration hither, was one to provide English seeds, roots and plants for the proposed settlement. In the list of fruits appear the peach, plum, cherry, pear, apple, and quince; also currant plants.

The evidences are many that during the Provincial as distinct from the Colonial period Massachusetts communities made notable advances upon the achievements of their predecessors in the line of horticulture. Still it cannot be said that horticulture was a characteristic of the out-door industry of that day. Only the wealthy or more prosperous citizens had gardens of fruits and flowers. The general yield of the soil was specifically agricultural.

But we have mention of beautiful gardens in Boston and other populous centres. Would that there had been Kodaks in those early days to depict for us those early gardens. The eastern slope of Cotton or Pemberton Hill fronting on what we know as Tremont Row and Tremont Street north of Beacon Street, was to a very considerable extent terraced, and the successive levels of arable land were stocked with choice fruits and flowers.

Andrew Faneuil and his nephew and successor, the famous Peter Faneuil, owned and occupied one of the most celebrated of these estates. Its location was about opposite to the King's Chapel burial ground. The late Lucius M. Sargent, who had probably better information about the matter than any modern man, described the estate as "Faneuil's seven-acre Eden." The next estate was that of Governor Bellingham, and others of similar planning and adornment were farther to the northward along the slope.

Thomas Hancock, the uncle of the patriot and first Governor under the Constitution, appears to have had two slopes thus terraced and made luxuriant,—one on the south, near the Hancock mansion and overlooking the Common, and one on the north, covering, in part, territory known to us as upper Hancock Street and the State-House-extension lot.

Without doubt these numerous demonstrations of the horticultural art served both as instruction and incentive to others.

Horticulturists of the patriotic order who remained on their estates could have found but small opportunity under the conditions

prevailing in the ensuing ten or fifteen years, from the commencement of the Revolution, to gratify such tastes for horticulture.

But, as already intimated, the establishment of the new government on a solid basis brought about a revival. Cultivators of the soil throughout all the States took on new hope and enthusiasm, the chief men of the several communities leading the way. While the order of the Cincinnati established during this period encountered some opposition and criticism, the example of the old Roman, from whom the order derived its name, was very generally followed.

Washington, first in peace as in war, may be said to have been an early pioneer in this movement. The records of his diary and his correspondence show his personal activity in the way both of agriculture and horticulture. While the crops of tobacco, of maize, of cereals and roots of various sorts were diligently attended to, he found time to plant not only fruit trees but ornamental trees on his homestead premises. He surveyed, or caused to be surveyed, the grounds about the mansion, and designated on the plan thus produced the spot where certain trees or shrubs were to be set. He imported choice vines and trees from Europe.

He writes to a friend during these activities, expressing hope of a visit at a future day, and says that he will greet him under the shade of trees which his own hands have planted.

In these records we may read of exotic shrubs; of the planting of elm, maple, hemlock and ash trees along winding paths; of planting holly bushes and sowing holly berries in drills; of a green-briar hedge; of lilacs and honeysuckles; and also, in the same general scheme, we are informed of grapevines, crabapple trees and mulberry trees. What more beautiful spot than his ancient homestead's site at Mt. Vernon.

The second President of the United States, John Adams, during his term as Vice-President, became one of the founders of the system of agricultural societies in 1792, and throughout his long life never ceased from his enthusiasm for agriculture and horticulture.

And the third President, Thomas Jefferson, was an endless experimenter in these lines. Had he never gained international fame as a statesman and publicist, he would have gained it as

practitioner in farming and horticulture, and as inventor of appliances used in those arts.

The details need not be traced, for it will suffice to say that the impetus thus originating in the latter part of the 18th Century did not cease to be effective during the first quarter of the 19th, and that, in this condition of things, as the year 1829 was approaching, the formation of the Massachusetts Horticultural Society became an affair not so much, perhaps, of strenuous endeavor as of normal and timely evolution.

If what has thus been suggested may be regarded as remotely preliminary to the formation of the Society, certain circumstances, familiar enough to those who have scanned the official publications of the Society, may again be cited for the information of others, as being more directly and immediately preliminary.

In the year 1793 the first number of a magazine devoted to agriculture was issued in Massachusetts, which also had much bearing on horticulture. It was entitled the "Agricultural Repository." It continued periodically to appear until 1822, when a similar periodical was established by Thomas Green Fessenden, called "The New England Farmer." The field was cheerfully yielded to the new magazine by the publishers of the "Repository." The new periodical gave somewhat more space to matters horticultural, and, in the year 1828, the title was enlarged by adding the words "and Horticultural Journal."

In November, 1826, Joseph R. Newell, who had previously kept an agricultural warehouse elsewhere, removed to 52 North Market Street. In January, 1827, the office of the "Farmer" was established in the same building, on the second floor, where John B. Russell, then the publisher of the "Farmer," opened a seed-store.

The close combination of the "Farmer" office and the seed-store with the agricultural warehouse attracted agriculturists and horticulturists from all parts of the country; so that the office of the "Farmer" became an exchange for the discussion of all matters of interest to cultivators.

It was here that the subject of forming a horticultural society was discussed and when such a society was formed the "Farmer" naturally became its organ, when needed, and continued to be as long as the "Farmer" existed, that is, till the year 1846.

But the most immediate preliminary to the formation of the society was what may be styled a call and a response on the part of two citizens of reputation in a literary as well as horticultural way.

On January 9, 1829, a communication from Zebedee Cook, Jr. was printed in the "Farmer." It affirmed in quite eloquent terms the merit and utility of the horticultural art and called the attention of the practical horticulturists of the community "towards the founding of a Society for the promotion of that useful employment, of extending its blessings, and increasing the efforts of those who feel an interest in such pursuits."

The editor, Mr. Fessenden, cordially commended this appeal, and, in so doing, declared that "a Society for the promotion of skilful and scientific horticulture, established in Boston, would greatly subserve the interests of the community, as well as furnish avenues to laudable distinction and pure and praiseworthy enjoyment to the members of such an institution."

In the issue of the "Farmer" of the evening February 20th, an invitation, or "request," appeared addressed to such gentlemen as felt favorably disposed towards the institution of a Horticultural Society, to meet on February 24, at noon, at the insurance office of Zebedee Cook, Jr., for the purpose of taking preliminary measures thereto."

The record goes on to say that "although the day was bitterly cold, and a remarkable snow storm had just filled the streets to a depth of five or six feet, sixteen gentlemen appeared at the meeting."

The place of meeting was on Congress Street, No. 7½, or five doors southward from State Street. The insurance office bore that number, and the records of the board of assessors show that the location must have been what would now be described as the south-easterly corner of Worthington Building.

General H. A. S. Dearborn called the meeting to order and made fitting introductory remarks. The Hon. John Lowell presided and Zebedee Cook, Jr., was Secretary. Messrs. Dearborn and Cook, together with Samuel Downer, were made a committee to prepare a constitution and by-laws, and John B. Russell, Enoch Bartlett, Zebedee Cook, Jr., Samuel Downer and Cheever Newhall were associated as a committee to procure subscribers

to membership. The meeting was then adjourned to assemble at the same place on March 17, and then a constitution and by-laws were adopted and a permanent board of officers was chosen. General Dearborn was elected the first President of the Society.

The persons whose names are thus fortuitously brought together as being the first mentioned among those who are to be regarded as founders of the Society were representative men. The remainder of the one hundred and sixty subscribers, who were reported at the meeting of March 17, were men of like habits and sympathies.

Zebedee Cook, Jr., was a prosperous business man of the period and owned a fine estate of twenty-five acres, or more, in Dorchester. It was of irregular shape, fronting westerly upon what was then the turnpike road, now Dorchester Avenue, and southerly, with narrow dimensions, on Crescent Avenue. The southerly slope was made to be a triumph of horticulture, flowers and fruits sharing about equally in the honors. Near the front this garden was adorned by a lively brook, arched with grape vines, and in the rear the ground was thrown into terraces, which in the season were made brilliant with flowers. The ascent was crowned at the north with a rocky summit which gained the name of Cook's Hill. Thence a tract of arable land stretched, with ever widening margins and with gradual descent to the salt marshes.

This northerly tract was the farm. Agriculture had full sway here and in the centre was a huge barn for cattle and the storage of crops. Through this farm-tract the parkway called Columbia Road now extends towards South Boston.

The original estate had been split in two to make way for the Dorchester turnpike road, and the mansion house stood upon the westerly side of that road, on a triangular lot.

General Dearborn was the owner and occupant of an estate of eighty acres in Roxbury, near where Huntington Avenue now joins the old Brookline road. The mansion and grounds had been modelled by a preceding owner after some distinguished estate or the like in England.

That some share of this large estate was applied to horticulture is evident by the mention of General Dearborn as an exhibitor of rare fruits and flowers in the earliest exhibitions of the Society,

and by the fact that, on August 13, 1830, he had upon the table of that day's exhibition the first specimens ever shown of Dearborn's seedling pear.

John Lowell was the proprietor of what has been called a baronial estate at Roxbury. It was of extensive area and he had built upon it a stone residence copied from some European structure. The situation was on old Heath and Centre Streets. This estate, like that of Mr. Cook, though at a much later date, was cut in two to make a public way, in this instance not a turnpike road but the Boston and Providence railroad. Of its proper pretensions and just renown in the way of horticulture an opinion may be formed by the fact that the estate in Mr. Lowell's time had upon it five greenhouses.

Samuel Downer had at Dorchester one of the best stocked and best kept horticultural estates in the vicinity of Boston, at the date now referred to, and it held that rank for years afterwards. Its situation was the south-east declivity of "Jones' Hill." Its terraces were numerous and extensive. Fruits, rare in the extreme, were upon this hillside; flowering plants were scattered in settings here and there, and tribes of honey bees, whose hives occupied the level below the terraces, were busy and melodious at their work. On this estate originated the famous Downer cherry.

Enoch Bartlett's estate, in Roxbury, bordering southerly upon the present Dudley Street, northerly upon Magazine Lane and easterly upon Governor Eustis's estate, matched in some respects and surpassed in others that of Downer. The honors appear to have been about even between the two as to choice original fruitage; for on these Roxbury grounds was first produced the incomparable Bartlett pear.

Cheever Newhall owned and cultivated extensive farming tracts in Dorchester, towards one hundred acres in all. His homestead lot was perhaps of twenty-five acres, lying on the northerly side of the present Ashmont Street, and stretching towards Adams Street. Here he had flourishing orchards, principally of pear trees, of which there were several hundred. He was a man of enterprise and public spirit.

It does not appear that Messrs. Fessenden and Russell were men of landed property at the time now in view, but they were ardent champions of horticulture and efficient helpers in that cause.

The membership list of one hundred and sixty reported in March had, by September 10, 1829, increased to two hundred and forty-nine, comprising the names of many of the scientific and opulent citizens of Boston and suburbs, as well as considerable numbers of practical cultivators.

On April 28, 1829, the Society petitioned for an act of incorporation, which was promptly granted by the General Court, and was approved on June 12 by His Excellency Governor Lincoln, himself a practical horticulturist of your own energetic and busy city of Worcester, Mr. President, with its estates and Park land in whose Board I believe you are President.

The room where the meeting for organization of the Society was held, No. 7½ Congress Street, served in like manner for three subsequent meetings. It was convenient in some respects, situated at a central point, Mr. Cook's office being on the first floor. But with the increase of membership more space was needed, and, on June 9, arrangements previously made enabled the Society to hold a meeting in the building on North Market Street already spoken of. Here a place on the third floor had been fitted up, and in the first instance was called "the Society's room," which phrase the secretary improved upon in the next call — of date, June 12 — for a meeting, by giving the room a title as "Horticultural Hall."

The building has never quite lost the particular prestige thus obtained, and is still resorted to with horticultural intent and purpose, being now known as the Messrs. Breck's Agricultural Warerooms, from our distinguished Ex-President Joseph Breck, 1859–1862. Here the Society's earliest exhibitions of flowers were given, charming ones we may well believe, but small if measured by the present standards. The formation of a library, it appears, was also begun here. The situation and the outlook might be deemed, by Bostonians at least, as propitious for a beginning, giving a view of Faneuil Hall at the right hand, Quincy Market building and the market place on the left, and, through the vista of Merchants' Row, a glimpse of State Street.

The routine of things began at once by the display of choice samples weekly on Saturdays, though not during the winter season. The first weekly offering of products took place on June 20, 1829.

The first annual exhibition, on September 19, 1829, was made in the dining hall of the rebuilt famous hotel, known as the Exchange Coffee House. Visitors were admitted from 12 M. to 2 P. M., the members of the Society and guests being the exclusive occupants at 4 P. M., when a banquet was served,—a truly English idea to banquet, surrounded by the especial evidences of the objects for which the association existed. In the interval between the closing of the exhibition and the hour for dining, li erary or oratorical exercises took place in the hall of the Boston Athenæum.

Weekly displays continued to be made, as at first, at the North Market Street hall until May 14, 1831, when rooms were occupied in Joy's Building on Washington Street.

An enterprise, after considerable informal discussion, was entered upon on November 27, 1830, in the appointment of a committee "to inquire into the expediency of purchasing a piece of ground in the vicinity of Boston for a garden of experiment and a rural cemetery." This action culminated in the establishment of Mount Auburn Cemetery. The record of the Society in this matter is familiar and need not be traced in detail here.

The Society's responsible connection with the cemetery ceased on June 19, 1835, that being the date of the deed of conveyance of the premises to the Mount Auburn Corporation.

It appears to have been felt that the improvement of horticulture could be better promoted in other ways for the encouragement of individual efforts in the horticultural art, by the provision of suitable halls for the exhibition of improved products, and by the collection of a horticultural library than by the continuance of a garden.

To the policy of administration thus set forth, the Society has adhered. Liberal rewards have been offered and bestowed; a hall for exhibitions has been maintained; important and superb exhibitions have been made; the library has been steadily increased, both in respect to number of volumes and its intrinsic value and practical utility; quantities of seeds and rare plants have in the past been judiciously distributed; lectures, or public addresses, on horticultural themes have been provided, and much literature relating to the horticultural art and bearing the Society's approval has been issued.

Meetings, or banquets, of the Society have been graced by the presence of distinguished visitors from other states and lands and by men of special note among Massachusetts citizens.

Of the Society's brilliant festivals, the public assembly incident to the exhibition of 1845 could not have been surpassed, if ever equalled. The festival, as distinct from the exhibition, took place in the evening, in Faneuil Hall, which was made to be a scene of luxuriance by evergreen and floral adornment of the pillars and gallery fronts.

The President of the Society, Hon. M. P. Wilder, made the opening address, which was followed by speeches by Hon. Edward Everett, who had that morning arrived in Boston after a five years' residence abroad as minister to England; by Hon. Daniel Webster, who was introduced as "the Marshfield farmer"; by the Hon. J. G. Palfrey, Secretary of the Commonwealth; by Hon. Josiah Quincy, Ex-President of Harvard University; by Hon. R. C. Winthrop, and Hon. Caleb Cushing, who had just returned from his embassy to China. During the evening the venerable widow of Alexander Hamilton (daughter of Gen. Philip Schuyler), who sat on the right of the President, was introduced to the audience by Mr. Webster.

It may be remarked that on one or more occasions the annual exhibition was held in a huge tent on the Common. Besides its own halls in different locations (School Street and Tremont Street), the Society has, at different times, occupied for exhibitions Faneuil Hall, the Federal Street Theatre, Andrews Hall, and, four or five times, Music Hall.

That which I have endeavored to picture to you of the earlier days of this distinguished organization may be called the seed, the example, the incentive to the mighty changes and enormous advances that have followed.

Today, from the western line of Berkshire to the eastern shores of Massachusetts, the surface of our state bears evidence of horticultural activity and beauty in almost every degree of extent, and the advance is still making rapid strides.

In no small degree is our Society responsible for these results; she can well take much to her credit for the enhancing of the condition and beauty of the already fair face of this ancient Commonwealth.

As it is thought of, one is amazed at the improvements. Think only of the landscape beauty upon the many estates of all sizes in what is known as Metropolitan Boston, for example, with a most extensive system of Parks; the superb private estates with gardens; and the glass houses and fields of market produce in Arlington, Belmont, Revere and elsewhere, conducted upon business principles, guided by scientific knowledge, that can be surpassed nowhere else in the world; the markets for the sale of produce from these gardens, and the flower marts in many stores throughout our cities, contain products that vie with or surpass any that elsewhere exist; the knowledge of good road building is now with us, and is being put into practice in a way to be of great benefit; the encouragement of window gardening and school gardens is a most commendable feature of our work that deserves encouragement; and all direct and indirect influence for horticultural good that goes out from the fact of our existence as a Society.

In the long roll of members, past and present, who have been making this honorable record for the Massachusetts Horticultural Society, there are too many for me to recount, and to whom we all bow in respectful recognition. You know them well for their fondness for horticulture and their actual promoting of it. Those who have established the several prize funds, those who have given towards the support of our library, and especially that giver of largest amount in money, call for high recognition.

The many superb products of the soil that have first appeared on our tables and in our Halls to the benefit of the public are too numerous for me to try to recount.

I have, perhaps, taken up too much time and necessarily omitted much, but may your memories fill the gaps with reminiscent, helpful and pleasant thoughts of horticultural activity, progress and success from the time of our incorporation up to today.

We are now in this new Hall of great architectural beauty, designed after visits were made to structures used for like purposes abroad; prepared for horticultural uses in all its parts, and for such other uses as may be judged profitable, while being helpful and promotive to horticulture, without interfering with the duties of the Society. Its library and office floor is indeed

imposing, well lighted and quiet for its purposes; for the housing of its large and increasing, valuable library, which has reached more than ten thousand volumes bound and in pamphlet form. All is spacious. As the Society becomes more wonted to this new home, may its usefulness and honorable position that it has always held continue and advance, while it cares for the charge laid upon its shoulders by the State Government of 1829, at the instigation and by the wording of those earnest early horticulturists to whom I have referred "for the purpose of encouraging and improving the science and practice of Horticulture, and promoting the amelioration of the various species of trees, fruits, plants and vegetables, and the introduction of new species and varieties." Would that those words might be emblazoned on the walls of our Halls for all time, and may our Society always be most firmly united and organized upon the best business principles to uphold them.

I am sure that it has been the endeavor of all their successors in office and in the ranks, to strive to do their duty fully, and at all times, as they could best interpret it.

The great success of this Society has proved the wisdom of its management in the past; and with this building, and its large fund that will belong to it also ever devoted to promoting its aims and united effort for horticultural progress, success must ever be the goal that it will reach.

Let us ever seek to inspire a general and increasing interest in our work among the citizens of the Commonwealth so far as it is possible; may those who are able to make our large exhibitions for display a success by their exhibits, on the lines of instruction, pleasure, general helpfulness, and profit to the Society for other horticultural promotion, ever be ready to place their products within our Halls; and may those who seek recognition of merit and worth in new varieties ever find a continuance of the value to them of the award of merit from this Society, and seek it here.

May funds, from gift or bequest, continue to come to the Society from lovers of horticulture in every possible line for helpfulness, be they for effect either inside or outside of the Great Building.

We have now six hundred and eighty-two Life Members and one hundred and ninety-nine Annual Members — a total of eight

hundred and eighty-one. May people of every line of horticultural earnestness be encouraged to give their support to our good and patriotic cause.

Mr. President, I thank you and the Committee for your courteous invitation to speak upon the occasion, and heartily wish that all possible success from united effort in the Society's work now in progress here may result.

At the conclusion of General Appleton's address Mr. Ware, the presiding officer, declared the building dedicated to the advancement of flowers, fruits and vegetables.

Upon motion of General Appleton an expression of sympathy was sent by telegram to the President of the Society.

Mr. William C. Strong moved and it was voted that the address which President Hadwen had prepared for the occasion be requested and be published with the proceedings of the day.

Address of President Hadwen.

The Massachusetts Horticultural Society has reached a period of seventy-two years of incorporated life, and now approaches the third important epoch in its history, — the dedication of this Horticultural Building in which we are this day assembled, it being the third erected by the Society during its incorporation; and perhaps it may not be egotistical to state that it is without a peer in its arrangements for exhibitions, its magnificent architectural effect, and in its solidity and durability of construction. With its refined environment, having frontage on three streets, it is not only a conspicuous building in Boston, but equal, if not superior, to any Horticultural building in the world.

The Society during its seventy-two years of active existence, eminent in its calling, has achieved a marked success in the practical advancement of horticulture, and has rendered service to the whole country by advancing the art and science of horticultural pursuits. Its progress has been manifest in every known feature. The entire State, with its system of parks and rural embellishments, its highways, its adornment of homes, its increased revenue from horticultural pursuits is largely indebted to this Society, as well as are individuals who have been benefitted by the object lessons of its exhibitions, its library and its lectures during the winter seasons.

Let us hold in grateful remembrance the distinguished benefactors who, for this long period, have contributed their time and their means to insure the progress and prosperity of the Society, and let us encourage the active members now engaged in its wholesome work, both men and women who in the study of fruits, flowers and vegetables have natural and acquired fondness for pursuing the mysterious forces and hidden secrets which nature has always in store, and of which there is seemingly no end.

The silent, but magnificent exhibitions in the Halls denote the best practical demonstration of the progress of Horticulture, in which every season brings something new. Being now in gorgeous display, the flowers and the fruits of the autumn collected from all over the world are increasing the interest in the science of Horticulture in those who behold them; and the intelligence and skill manifested in their cultivation not only educate the faculties, but inspire a love for all that is beautiful and useful.

In the retrospect let us not be unmindful of the past, but ever cherish the work that has been accomplished by those who have preceded us in the great horticultural advancement that has made the Society eminent in encouraging the products of the fields, gardens and forests. These, being the special early objects of the Society, have now reached an importance unequalled by any period of time in the world's history.

DESCRIPTION OF THE NEW BUILDING

OF THE

MASSACHUSETTS HORTICULTURAL SOCIETY.

ERECTED A.D. 1900.

The completion and occupation of the new building of the Massachusetts Horticultural Society on Massachusetts Avenue, Boston, marks the beginning of another era in the history of the Society. For many years the need of enlarged accommodations has been strongly felt, and at various times propositions have been considered looking toward a change of location and providing increased facilities for carrying on the work of the institution.

The present building, it is believed, will furnish such accommodations for many years to come. The Building Committee, under whose supervision it has been erected, consisted of Francis H. Appleton, Charles S. Sargent, William J. Stewart, George A. Nickerson and Charles F. Curtis.

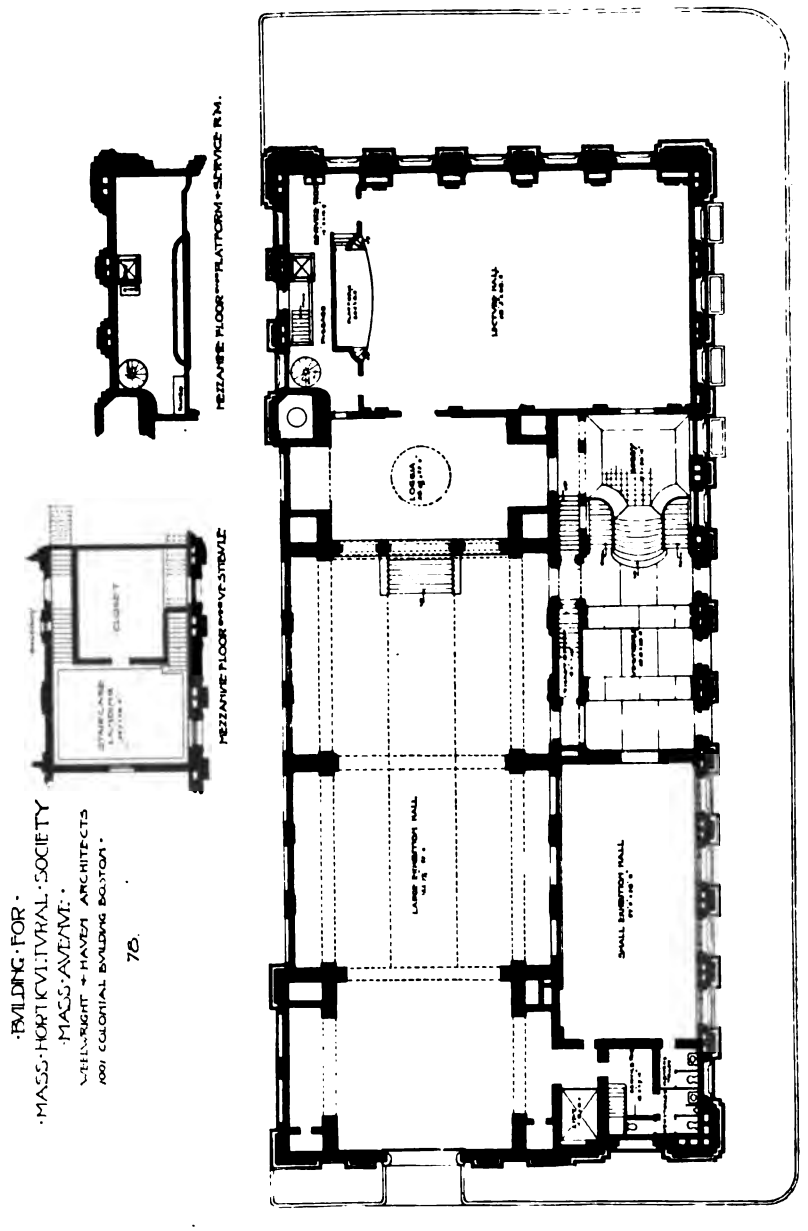
The accompanying plans from the architects' drawings present the general arrangement of the interior of the building while the frontispiece shows a view of the exterior, as seen from the corner of Massachusetts and Huntington Avenues.

The first floor of the building covers an area of 18,066 square feet, and contains the large exhibition hall, a smaller exhibition hall and a lecture hall.

The main hall is reached through a spacious vestibule, but a single step above the level of the sidewalk, and is 52½ feet in width by 123 feet in length, the height being 42 feet, not including the monitor roof.

At the easterly end of this hall is the loggia, a raised platform four and one-half feet above the main exhibition hall. It has an area of 28 by 52 feet, and broad stone steps connect it with the floor of the main hall. From the loggia a commanding view of the exhibitions can be had.

The small exhibition hall is 28 by 57 feet and 28 feet, 6 inches in height.



Plan of the New Building. First Floor.

The lecture hall, which is on a level with the loggia, is at the Huntington Avenue end of the building and has a stud of 25 feet, and its dimensions are 48 by 68 feet.

The basement is devoted to the committee rooms, dressing and waiting rooms and a large banquet hall, the Falmouth Street end being occupied by the heating and electric apparatus with the necessary accessories.

The second floor, which is built around an interior court of 6,511 square feet, contains the spacious library and rooms for the use of the Secretary, Treasurer and committees. There is in addition large storage space for general uses.

The library is well lighted, arranged in alcoves and has a gallery around three sides. Every book is easily accessible without the aid of step-ladders. In design and finish the library is of great architectural beauty, and has ample capacity for at least fifteen years. The space for additional stacks, which the adjacent attics afford, gives room to meet all probable needs of book space that will ever be required.

The height of the building above the grade of the sidewalk to the top of the cornice is 57 feet, and to the top of the roof is 69 feet, 6 inches.

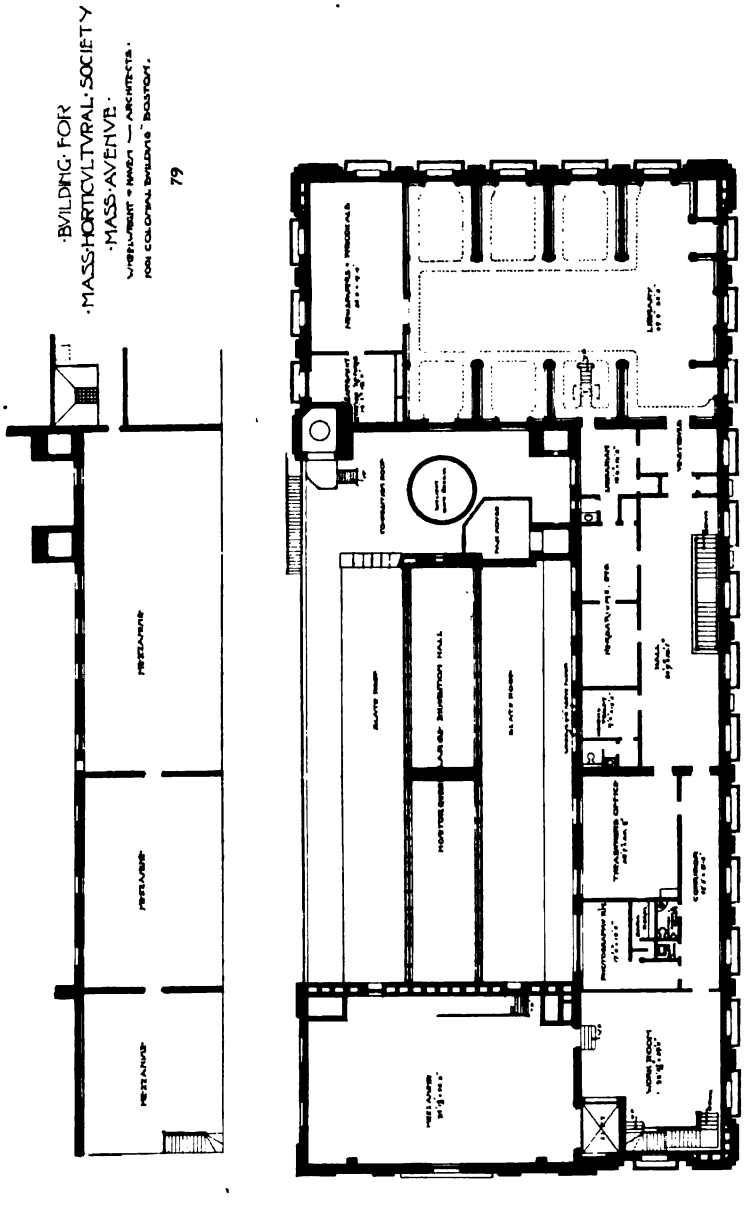
The construction is that of a building of the first class, as required by the building laws of this city, being in its main structure built of incombustible material.

The floors are of guastavino tile and concrete, or the concrete construction of the Eastern Expanded Metal Company.

In the roofs the same methods are employed, except that the roof over the large exhibition hall is composed in part of three-inch plank protected by metal lathing and plaster. The foundation's footings are concrete, widely spread upon the gravel and sand subsoil which was found to be too coarse to permit the economical use of piling.

The base course is of Deer Isle granite. The exterior brick is red, eastern water-struck, face brick, laid Flemish bond and the trimmings are of Bedford limestone.

The cheneau is of terra-cotta, matching the color of the limestone; the frieze panels being of Brescia, Bois d' Orient and Red of Levanto marble. The principal features of the facade are the



Plan of the New Building. Second Floor.

corner piers and the colonnade of brick pilasters supporting an ornamental entablature.

The floor of the entrance lobby is of North River bluestone, and that of the committee rooms in the basement and the small exhibition hall is granolithic.

The lecture hall, loggia and second story rooms have Georgia pine floors, while the large exhibition hall which has a temporary spruce floor, was originally designed to have a gravel floor so that pots of plants might be readily imbedded therein with a garden effect like that of some European horticultural buildings.

The walls of the lobby and small exhibition hall are laid with eastern pressed brick and those of the large exhibition hall and its loggia with eastern water-struck face brick.

The committee rooms in the basement, the lecture hall and the rooms on the second floor, other than the storage room, have plastered walls and ceilings.

The south wall of the storage room on the second floor at the Falmouth Street end, over the large exhibition hall, is supported by a brick arch to avoid the necessity of using steel girders which would have to be covered with metal laths and plaster to conform to the requirements of the building regulations.

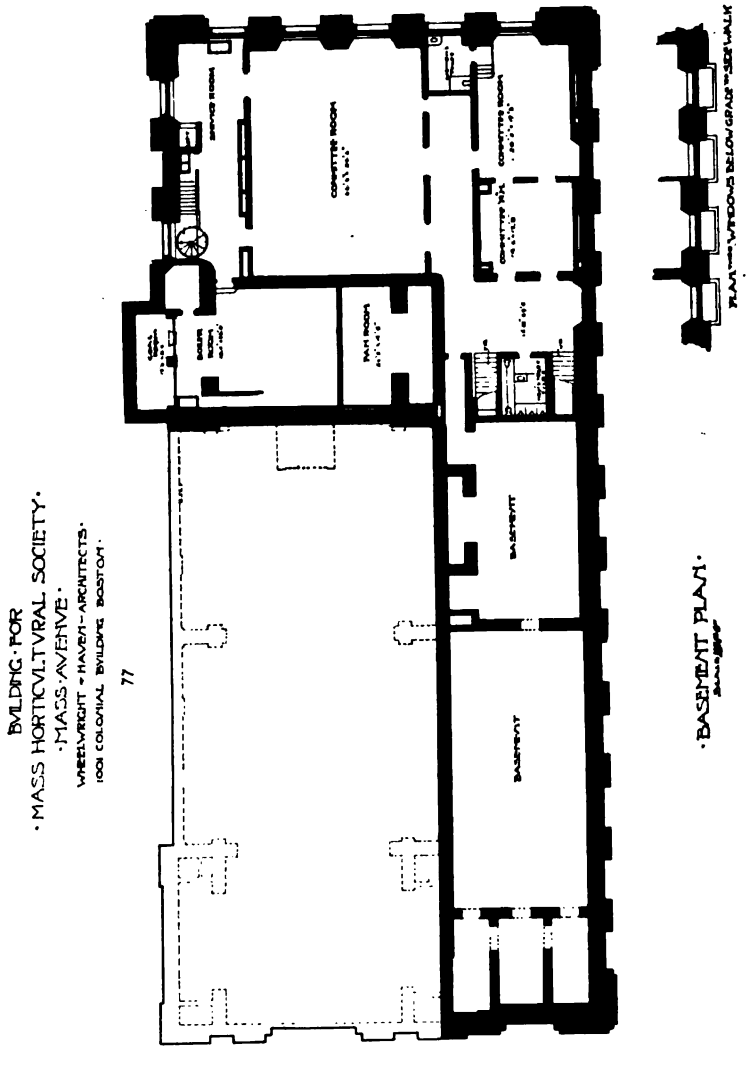
From Falmouth Street a wide and high doorway gives access on the street level to the floor of the large exhibition hall. This facilitates the easy and safe handling of large plants in the flower shows, thereby meeting the needs of the Society in this respect.

The interior finish throughout is selected Georgia pine. A large hand-lift serves the storage rooms on the Falmouth Street side of the building, and an electric lift, the well equipped kitchen over the service room which adjoins the lecture hall.

The heating, ventilation and electric work was carried out under the direction of Hollis French and Allen Hubbard, engineers, and the building was designed and constructed by Wheelwright & Haven, architects.

The cost of the building was $290,997 and that of the land $225,000, making a total of $515,997.

As an architectural work, the new Horticultural Hall is a noteworthy addition to the public buildings of the city, and its new location is destined to become the center of great business and social activities.



Plan of the New Building. Basement.

REPORT

OF THE

COMMITTEE ON PLANTS

FOR THE YEAR 1901.

By ARTHUR H. FEWKES, CHAIRMAN.*

Notwithstanding the unsettled conditions under which we have labored the past year, our exhibitions up to the time of leaving the old hall, and since the completion of the new, have been very satisfactory, particularly in the general good quality of the exhibits.

During the early part of the year we were favored, nearly every Saturday, with fine displays of Orchids which were most interesting and instructive. It is gratifying to note the unabated interest shown in exhibiting this class of plants and we look for its continuance.

In May our Committee unfortunately lost its chairman, Mr. Lunt, by resignation, and as an orchid expert his loss to us is keenly felt. In the following report, the part which covers the time up to his resignation, — from January 5th to April 6th — was written by him, the remainder by his successor.

The first exhibits of the year were made on January 5. The display of Primulas on this occasion, while showing improvement over former years, was not up to the standard in the *stellata* group. James E. Rothwell showed *Cypripedium* × *Longwoodense*, a pleasing hybrid between *C. Leeanum* var. *Masreelianum* and *C. Charlesworthii*, which received Honorable Mention. Oakes

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* Elected Chairman July 6th in place of William Wallace Lunt resigned.—Ed.

Ames exhibited three hybrid Cypripediums, viz: *Cypripedium* × *President McKinley* (*C. Harrisianum* × *C. insigne*), *C.* × *James A. Garfield* (*C. tonsum* var. *superbum* × *C. regale*) which received a First Class Certificate of Merit, and *C.* × *James K. Polk* (*C. Chamberlainianum* × *C. nitens*) which received Honorable Mention.

January 12. The exhibition on this day consisted of three very fine hybrid Cypripediums, as follows: — *Cypripedium* × *Chapmanii* (*C. Curtisii* × *C. bellatulum*) from Oakes Ames, *Cypripedium* × *Henry Graves, Jr.* (*C. Lawrenceanum* × *C. Marshallianum*) from J. E. Rothwell, and *Cypripedium* × *Hera*, var. *Trenton* (*C. Leeanum* var. *Masreelianum* × *C. Boxallii*) from C. G. Roebling of Trenton, N. J., the two former receiving Honorable Mention and the latter being awarded a First Class Certificate of Merit.

January 26. Henry T. Clinkaberry, of Trenton, N. J., exhibited a remarkably fine variety of *Cypripedium* × *Aylingii* var. *Washingtonianum* (*C. ciliolare*, giant variety, × *C. niveum* var. *grandiflorum*); this, without doubt, was *one* of the finest cypripediums exhibited for a number of years, combining as it did fine coloring and strength. It received the award of a Silver Gilt Medal.

February 2. The display of Freesias was disappointing, there having been a great falling off in late years of exhibits of this interesting class. R. & J. Farquhar & Co. exhibited a fine lot of Begonia Gloire de Lorraine var. *nana compacta*, for which they received a Silver Medal. Mrs. B. P. Cheney had twelve very fine plants of *Primula obconica*, and C. G. Roebling exhibited *Cypripedium* × *tessellatum* var. *Harrisianum*, for which he was awarded a First Class Certificate of Merit.

February 9. Walter P. Winsor exhibited *Dendrobium nobile* var. *Burfordiense*, for which he was awarded a Silver Medal. This is an unique form of *D. nobile* having the reverse marking of *D. Cooksoni*.

February 16. Mrs. F. L. Ames exhibited the most remarkable and interesting group of Dendrobiums ever shown within the remembrance of the Committee, receiving for the Collection a Silver Gilt Medal. They were as follows:

Dendrobium × *Ainsworthii* (type), and var. *roseum*,

" × *Amesianum*,

Dendrobium Amesianum var. × *grandiflorum*, which received a First Class Certificate of Merit,
" × *chrysodiscus*, which received a First Class Certificate of Merit,
" × *Cybele*, which received a Silver Medal,
" *Dulce*,
" × *euosmum*,
" *nobile* (type),
" " var. *Arnoldianum*,
" " " *Backhouseanum*, which received a Silver Medal,
" " " *Cooksoni*,
" " " *majus*,
" " " *nobilius*,
" " " *virginale*,
" *Robinsonianum*,
" × *Schneiderianum* var. *giganteum*, which received a First Class Certificate of Merit,
" × *splendidissimum* var. *grandiflorum*.

Walter Angus, gardener to Hon. Moses T. Stevens, North Andover, Mass., was awarded a First Class Certificate of Merit for Superior Cultivation of Begonia Gloire de Lorraine, and the Harvard Botanic Garden received awards as follows:

Primula stellata var. *alba*, First Class Certificate of Merit for Superior Cultivation,
Primula stellata var. *compacta*, Honorable Mention.

February 23. Mrs. John L. Gardner exhibited several plants of a seedling asparagus, which was claimed to be new, and which the Committee asked to have shown again after having been planted out. It received the award of Honorable Mention.

March 2. Oakes Ames exhibited *Coleus thyrsoideus*, a new flowering coleus of a pleasing color, receiving therefor a First Class Certificate of Merit.

March 9. James Comley exhibited a seedling Indian Azalea, var. New Century, for which he was awarded a gratuity.

SPRING EXHIBITION.

March 19, 20, 21 and 22.

This was a notable exhibition, and being the last large exhibition to be held in the old Hall each exhibitor apparently endeavored to do his utmost to make it a memorable one. It would not only be well nigh impossible but it would take too much space to give all the details of this exhibition, therefore mention will only be made of the more noticeable and important features. It is to be regretted that the class for Indian Azaleas is not competed for to a larger extent, the class (No. 29) for six named varieties not having an entry. Class No. 32, for Specimen Orchids brought out a grand display from Bayard Thayer (James Brydon, gardener). The display of Dutch Bulbs from the various exhibitors was all that could be desired, all being of exceptional merit. The exhibit of *Primula Sieboldi* by Frederic J. Rea showed great improvement, and was awarded a Bronze Medal, and the exhibits of Cyrus Lothrop of *Laelia flava*, Anson Phelps Stokes of *Asparagus Sprengeri* var. *compactus*, and M. H. Walsh of a Hardy Climbing Rose, were awarded First Class Certificates of Merit and were all remarkable for fine cultivation.

March 30. Col. Charles Pfaff exhibited *Dendrobium fimbriatum* var. *oculatum*, receiving a Bronze Medal for the same, and the Harvard Botanic Garden received Honorable Mention for *Asparagus schoberioides*.

April 6. E. S. Converse (D. Roy, gardener) displayed eighteen plants of dwarf Hydrangeas in pots for which he was awarded a gratuity.

After April 6th we had no exhibits until August 24th, when Oakes Ames (R. M. Grey, gardener) sent in a new hybrid orchid, *Cypripedium* × *Boxallo-Rothschildianum*, a plant of European origin, for which a Bronze Medal was awarded.

CHRYSANTHEMUM SHOW.

November 7, 8, 9 and 10.

After August 24 nothing was shown until the Chrysanthemum Show which opened on November 7th and included plants for which prizes were offered at the delayed September shows.

First Chrysanthemum Show in the New Building.

This exhibition marked the opening of the new Hall by the Society and was a most gratifying success although made under the discouraging conditions prevailing in the new exhibition room.

The quality of the plants shown, as a whole, was never excelled here, and seldom equaled, although the interest in the extra large specimens seems to be falling off somewhat. It is correspondingly on the increase in the class for nine-inch pots and some very beautiful plants of this size were shown.

Mrs. B. P. Cheney, E. S. Converse, Walter Hunnewell, J. S. Bailey, Dr. C. G. Weld, and James Nicol were the principal exhibitors of Chrysanthemum plants in the various classes. The interesting classes for plants grown to one flower and stem were well competed for and included many fine specimens.

The first prize for twelve named plants went to Mrs. B. P. Cheney and the second to E. S. Converse.

Mrs. Cheney's plants were:

Kate Broomhead,
Louis Boehmer,
Miss Georgiana Pitcher,
Mrs. C. B. Freeman,
Mrs. F. A. Constable,
Mrs. J. G. Breer,
Mrs. J. Trainker,
Mutual Friend,
Peter Kay,
Shilowa,
Silver Cloud,
The Bard.

Mr. Converse's plants were:

Arethusa,
Edith Smith,
Golden Gate,
Jeannie Falconer,
Louis Boehmer,
Marion Henderson,
Mrs. C. B. Freeman,
Mrs. J. G. Breer,
Mrs. J. Lewis,
Red Warrior,
The Bard,
Theo.

For ten named plants in nine-inch pots, J. S. Bailey was first, Walter Hunnewell second, and E. S. Converse third.

Mr. Bailey's plants were:

Arethusa,
Casco,
Col. D. Appleton,
Golden Trophy,
Ivory,
John Shimpton,
Louis Boehmer,
Mrs. H. Robinson,
Mrs. J. Lewis,
Theo.

Mr. Hunnewell's plants were:

Arethusa,	Mrs. H. Weeks,
Black Hawk,	Mrs. J. Lewis,
Defender,	Mutual Friend,
Edna,	Oriental Glory,
Kate Broomhead,	The Bard.

Mr. Converse's plants were:

Black Hawk,	Mrs. H. Weeks,
Ivory,	Mrs. J. G. Breer,
Louis Boehmer,	Mutual Friend,
Marion Henderson,	Red Warrior,
Mrs. C. B. Freeman,	The Bard.

Among the displays not in competition a very important addition to the exhibition was the one made by R. & J. Farquhar & Co. of Standard Bays, Palms, Araucarias and Begonia Gloire de Lorraine var. Caledonia. This display filled the entire rear end of the hall and made a welcome background for the other exhibits. R. & J. Farquhar & Co. also showed for the first time the variegated form of *Ficus repens* for which a First Class Certificate of Merit was awarded.

Lager & Hurrell of Summit, N. J., made an extensive display of orchids which were the centre of much interest throughout the exhibition.

Two other exhibits were worthy of more than passing notice, the magnificent collection of Gymnogrammas, silver and golden, from Charles Evans, and the pan of *Nerine flexuosa excellens* from Mrs. Cornelius Vanderbilt of Newport, R. I. (Robert Laurie, gardener). The former were very finely grown specimens in perfect condition, and the latter was a remarkably well-flowered specimen of this old but rare bulb, a representative of a very interesting but much neglected class of plants.

Mrs. John L. Gardner showed *Asparagus deflexus*, an interesting form in the way of *A. Sprengeri*, and received a First Class Certificate of Merit for it.

November 30. J. Tailby & Son of Wellesley, put on exhibition specimens of their Begonia Glory of Wellesley. This begonia is claimed to be a sport from the Gloire de Lorraine and was shown to us late last winter but not in condition to secure

recognition. It was again shown on the above date, at our request, in much better condition, proving the plant to be a much stronger growing form than the original and with larger flowers. It received the award of a Silver Medal.

Amount appropriated for prizes and gratuities for 1901		$2000 00
Amount awarded for prizes and gratuities	$1199 00	
Estimated cost of medals awarded	61 00	1260 00
Leaving an unexpended balance of		$740 00

PRIZES AND GRATUITIES AWARDED FOR PLANTS. 1901.

JANUARY 5.

PRIMULA SINENSIS.—Six plants in not less than six-inch pots:

First, Mrs. John L. Gardner	$4 00
Second, Mrs. John L. Gardner	3 00
Third, Mrs. B. P. Cheney	2 00

PRIMULA STELLATA.—Six plants in not less than six-inch pots:

Second, Mrs. John L. Gardner	2 00

PRIMULA OBCONICA HYBRIDS.—Six plants in not less than six-inch pots:

First, Mrs. B. P. Cheney	4 00
Second, Mrs. B. P. Cheney	3 00
Third, Mrs. John L. Gardner	2 00

FEBRUARY 2.

FREESIAS. — Six pots or pans:

Second, H. Dumaresq	4 00

Gratuity:—

Mrs. B. P. Cheney, Twelve plants *Primula obconica*	5 00

FEBRUARY 16.

Gratuity:—

Harvard Botanic Garden, Display of Lachenalias and *Primula obconica*	8 00

FEBRUARY 23.

Gratuity:—

Harvard Botanic Garden, Thirty plants of seedling Cyclamen	8 00

MARCH 9.

Gratuities:—

James Comley, Seedling Indian Azalea New Century . . . 3 00
Bussey Institution, Display of Indian Azaleas, *Pyrus floribunda* var., and *Staphylea colchica* 4 00

SPRING EXHIBITION.

MARCH 19, 20, 21, AND 22.

Theodore Lyman Fund.

INDIAN AZALEAS.—Specimen plant, named:
First, Edward Butler $8 00
Second, Dr. C. G. Weld 6 00
Third, Dr. C. G. Weld 4 00

Society's Prizes.

ERICAS.—SIX, not less than three species:
First, Dr. C. G. Weld 6 00
ORCHID.—Single plant:
First, Bayard Thayer 12 00
Second, Bayard Thayer 10 00
Third, Bayard Thayer 6 00
Fourth, Mrs. John L. Gardner 4 00
STOVE OR GREENHOUSE PLANT.—Specimen in bloom, other than Azalea or Orchid, named:
First, Dr. C. G. Weld 8 00
Second, James Comley 6 00
HARDWOODED GREENHOUSE PLANTS.—Four, in bloom:
First, Dr. C. G. Weld 10 00
Second, Dr. C. G. Weld 8 00
HARDY FLOWERING DECIDUOUS SHRUBS, FORCED.—Four, of four distinct species, named:
First, Mrs. John L. Gardner 8 00
Second, Bussey Institution 5 00
HARDY PRIMROSES.—Twelve plants of distinct varieties:
Third, Mrs. John L. Gardner 2 00
HARDY POLYANTHUSES.—Twelve plants of distinct varieties:
Second, Dr. C. G. Weld 4 00
CYCLAMENS.—Ten plants:
First, Mrs. B. P. Cheney 15 00
Second, J. S. Bailey 12 00
Ten plants, in not over seven-inch pots:
First, Mrs. B. P. Cheney. 8 00

Second, Mrs. B. P. Cheney	$6 00
Third, J. S. Bailey	4 00
Single plant:	
First, Mrs. B. P. Cheney	5 00
Second, H. H. Rogers	4 00
Third, H. H. Rogers	3 00
CINERARIAS.—Six varieties:	
First, Mrs. B. P. Cheney	10 00
Second, Mrs. John L. Gardner	8 00
Third, Dr. C. G. Weld	6 00
Three varieties:	
First, Mrs. John L. Gardner	6 00
Second, Mrs. B. P. Cheney	5 00
Third, Mrs. John L. Gardner	4 00
Single plant:	
First, Mrs. John L. Gardner	3 00
Second, H. H. Rogers	2 00
HYACINTHS.—Twelve named varieties in pots, one in each pot:	
First, Dr. C. G. Weld	8 00
Second, Mrs. John L. Gardner	5 00
Third, Bussey Institution	3 00
Six named varieties in pots, one in each pot:	
First, Dr. C. G. Weld	5 00
Second, Mrs. John L. Gardner	4 00
Third, Mrs. John L. Gardner	3 00
Single named bulb in pot:	
First, Bussey Institution	2 00
Second, Mrs. John L. Gardner	1 00
Three pans, not to exceed twelve inches, ten bulbs of one variety in each pan:	
First, Dr. C. G. Weld	6 00
Second, Dr. C. G. Weld	4 00
Third, Mrs. John L. Gardner	3 00
Two pans, not to exceed twelve inches, ten bulbs of one variety in each pan:	
First, Dr. C. G. Weld	4 00
Second, Mrs. John L. Gardner	3 00
Third, Bussey Institution	2 00
Single pan, not to exceed twelve inches, with ten bulbs of one variety:	
First, Mrs. John L. Gardner	3 00
Second, Bussey Institution	2 00
Third, Bussey Institution	1 00
TULIPS.—Six eight-inch pans, nine bulbs of one variety in each:	
First, Dr. C. G. Weld	6 00
Second, W. S. Ewell & Son	4 00
Third, W. S. Ewell & Son	2 00

Three eight-inch pans, nine bulbs of one variety in each:

First, Dr. C. G. Weld	3 00
Second, W. S. Ewell & Son	2 00
Third, W. S. Ewell & Son	1 00

Three ten-inch pans, twelve bulbs of one variety in each:

First, Dr. C. G. Weld	5 00
Second, Dr. C. G. Weld	4 00
Third, W. S. Ewell & Son	3 00
Fourth, W. S. Ewell & Son	2 00

POLYANTHUS NARCISSUS.—Four seven-inch pots, four bulbs in each, distinct varieties:

First, Dr. C. G. Weld	4 00
Second, Dr. C. G. Weld	3 00
Third, Bussey Institution	2 00

JONQUILS.—Six pots or pans, not exceeding eight inches, the number of bulbs in each to be at the discretion of the grower:

First, W. S. Ewell & Son	4 00
Second, Dr. C. G. Weld	3 00
Third, W. S. Ewell & Son	2 00

NARCISSUSES.—Six eight-inch pans, distinct varieties, single or double:

First, Dr. C. G. Weld	6 00
Second, W. S. Ewell & Son	4 00
Third, Harry S. Rand	3 00

Three eight-inch pans:

First, W. S. Ewell & Son	3 00
Second, Dr. C. G. Weld	2 00

LILIUM LONGIFLORUM.—Four pots, not exceeding ten inches:

First, E. N. Peirce & Son	10 00
Second, E. N. Peirce & Son	8 00

LILY OF THE VALLEY.—Six pots or pans, not exceeding eight inches:

First, W. S. Ewell & Son	4 00
Second, Bussey Institution	3 00
Third, Bussey Institution	2 00

CROCUSES.— Three boxes, each eight by twenty inches, three distinct varieties:

First, W. S. Ewell & Son	3 00
Second, W. S. Ewell & Son	2 00
Third, Bussey Institution	1 00

IXIAS.—Six pots or pans, in varieties:

First, Dr. C. G. Weld	5 00

TRITONIAS.—Six pots or pans, in varieties:

First, Dr. C. G. Weld	5 00

ROMAN HYACINTHS.—Six eight-inch pans, ten bulbs in a pan:

First, W. S. Ewell & Son	4 00

Second, W. S. Ewell & Son 2 00
Third, Bussey Institution 1 00

GENERAL DISPLAY OF SPRING BULBS.—All classes:

First, Dr. C. G. Weld 25 00
Second, W. S. Ewell & Son 20 00
Third, Bussey Institution 15 00

Gratuities:—

H. H. Rogers, Collection of Azaleas and Cyclamen . . . 5 00
Mrs. B. P. Cheney, Collection of Cyclamen 6 00
Mrs. John L. Gardner, Collection of Hyacinths 3 00
Hon. M. T. Stevens, Collection of Begonia Gloire de Lorraine . 5 00
James Comley, Display of Tricolor Geraniums . . . 2 00
I. G. Noyes, Collection of Cacti 2 00
Bussey Institution, Collection of Native Plants 5 00
Harvard Botanic Garden, Display 20 00

APRIL 6.

Gratuity:—

E. S. Converse, Display of eighteen plants of Dwarf Hydrangeas 8 00

CHRYSANTHEMUM SHOW.

NOVEMBER 7, 8, 9, AND 10.

☞ This was the opening exhibition held by the Society in its new halls and includes the postponed **Annual Exhibition of Plants and Flowers** and **Annual Exhibition of Fruits and Vegetables,** which were scheduled for September.

PALMS.—Pair, in pots or tubs, not more than twenty-four inches in diameter:

First, Mrs. John L. Gardner 12 00

Pair, in pots not more than fourteen inches in diameter:

First, Dr. C. G. Weld 8 00
Second, Mrs. John L. Gardner 6 00

GREENHOUSE PLANTS.—Collection containing foliage plants of all descriptions, not to exceed forty plants, in pots or tubs:

First, Mrs. John L. Gardner 45 00

Six Greenhouse and Stove Plants, of different named varieties, two Crotons admissible:

First, Mrs. John L. Gardner 25 00
Second, J. S. Bailey 20 00

TABLE DECORATION.—For fifteen covers, in one receptacle, only one entry admissible:

First, Edward J. Mitton 10 00

FLOWERING GREENHOUSE PLANT.—Single specimen, named:

First, Dr. C. G. Weld	8 00

FERNS.—Specimen, other than Tree Fern:

First, James L. Little	4 00
Second, Charles Evans	3 00

DRACÆNAS.—Six named varieties:

First, J. S. Bailey	8 00
Second, Mrs. John L. Gardner	5 00

CROTONS.—Six named varieties, in not less than eight-inch pots:

First, J. S. Bailey	10 00

CYCAD.—Single plant, named:

First, Dr. C. G. Weld	10 00

CHRYSANTHEMUMS.—Display of twelve named plants, any or all classes, distinct varieties:

First, Mrs. B. P. Cheney	60 00
Second, E. S. Converse	50 00

Display of ten named plants, any or all classes, distinct varieties, in not exceeding nine-inch pots:

First, J. S. Bailey	30 00
Second, Walter Hunnewell	25 00
Third, E. S. Converse	20 00

Three Japanese Incurved:

First, Mrs. B. P. Cheney	12 00

Specimen Japanese Incurved, named variety:

First, Mrs. B. P. Cheney	6 00
Second, E. S. Converse	5 00

Specimen Reflexed, named variety.

First, E. S. Converse	6 00
Second, Mrs. B. P. Cheney	5 00
Third, E. S. Converse	4 00

Specimen Anemone Flowered, named variety:

First, Walter Hunnewell	6 00
Second, J. S. Bailey	5 00

Specimen Pompon, named variety:

First, E. S. Converse	4 00
Second, Mrs. B. P. Cheney	3 00

Twelve plants, of twelve different varieties, grown to one stem and bloom, in not over six-inch pots, preference being given to plants not more than three feet in height:

First, James Nicol	8 00
Second, Dr. C. G. Weld	6 00
Third, E. S. Converse	4 00
Fourth, R. C. Winthrop	2 00

Six plants grown as above but all of one color, Red:

First, James Nicol	4 00
Second, Dr. C. G. Weld	3 00
Third, E. S. Converse	2 00

White:
First, James Nicol 4 00
Second, James Nicol 3 00
Third, Dr. C. G. Weld 2 00
Pink:
First, Dr. C. G. Weld 4 00
Second, Dr. C. G. Weld 3 00
Yellow:
First, James Nicol 4 00
Second, Dr. C. G. Weld 3 00
Third, Dr. C. G. Weld 2 00
Any other color:
First, Dr. C. G. Weld 4 00
Second, Dr. C. G. Weld 3 00
Third, R. C. Winthrop 2 00
Six plants grown to bush form, in not over eight-inch pots, without stakes:
Second, J. S. Bailey 6 00
Group of Chrysanthemums, arranged for effect, with palms and decorative foliage plants, limited to one hundred square feet:
First, Mrs. John L. Gardner 25 00

Gratuities:—

E. S. Converse, Eight plants Standard Chrysanthemums . . 16 00
Dr. C. G. Weld, Display of single stem Chrysanthemums . . 10 00
James Nicol, Single stem Chrysanthemums 3 00
Walter Hunnewell, three Chrysanthemum plants 5 00
Lager & Hurrell, Summit, N. J., Display of Orchids . . . 25 00
H. N. Eaton, Display of *Lilium Harrisii* 6 00
E. S. Converse, *Peristeria elata* 2 00
Dr. C. G. Weld, Display of Heaths 2 00
R. & J. Farquhar & Co., Display of Bay-trees, Palms, Araucarias and Begonia Caledonia 50 00
Charles Evans, Display of Gymnogrammas, silver and golden . 15 00
F. Skinner, Stag-horn Ferns 2 00
James Anderson, Crested Nephrolepis 1 00

SOCIETY'S SILVER GILT MEDALS.

January 26. Henry T. Clinkaberry, Trenton, N. J., for *Cypripedium* × *Aylingii* var. *Washingtonianum* (*C. ciliolare*, giant var. × *C. niveum grandiflorum*).

February 16. Mrs. F. L. Ames, for collection of Dendrobiums:
D. Ainsworthii (type), *D. nobile* var. *Arnoldianum*,
" " var. *roseum*, " " " *Backhouseanum*,
" *Amesianum*, " " " *Cooksoni*.

D. Amesianum, var. *grandiflorum*,
" *chrysodiscus*,
" *Cybele*,
" *Dulce*,
" *euosmum*,
" *nobile*,
D. nobile var. *majus*,
" " " *nobilius*,
" " " *virginale*,
" *Robinsonianum*,
" *Schneiderianum giganteum*,
" *splendidissimum grandiflorum*.

SOCIETY'S SILVER MEDALS.

February 2. R. & J. Farquhar & Co., for Begonia Gloire de Lorraine var. *nana compacta*.

February 9. Walter P. Winsor, for *Dendrobium nobile* var. *Burfordiense*.

" 16. Mrs. F. L. Ames, for *Dendrobium nobile Backhouseanum*.

" " Mrs. F. L. Ames, for *Dendrobium Cybele*.

November 30. J. Tallby & Son, for Begonia Glory of Wellesley.

December 21. Henry T. Clinkaberry, for *Laelio-Cattleya Cappei* var. *Intensity* (*C. Warscewiczii* var. *Lagerii* × *L. cinnabarina*), the second prize for American Seedling Orchid, other than Cypripedium, exhibited by the originator.

SOCIETY'S BRONZE MEDALS.

Spring Exhibition, March 19–22. Frederic J. Rea, for collection of *Primula Sieboldi*, sixteen varieties.

March 30. Col. Charles Pfaff, for *Dendrobium fimbriatum* var. *oculatum*.

August 24. Oakes Ames, for new Hybrid Orchid, *Cypripedium* × *Boxallo-Rothschildianum*.

FIRST CLASS CERTIFICATES OF MERIT.

January 5. Oakes Ames, for *Cypripedium* × *James A. Garfield* (*C. tonsum* var. *superbum* × *C. regale*).

January 12. C. G. Roebling, Trenton, N. J., for new seedling *Cypripedium* × *Hera* var. *Trenton* (*C. Leeanum* var. *Masreelianum* × *C. Boxalli*).

February 2. C. G. Roebling, for *Cypripedium* × *tessellatum* var. *Harrisianum*.

February 16. Mrs. F. L. Ames, for *Dendrobium chrysodiscus*.

" " Mrs. F. L. Ames, for *Dendrobium Schneiderianum giganteum*.

" " Mrs. F. L. Ames, for *Dendrobium Amesianum* var. *grandiflorum*.

" " Walter Angus, for Superior Cultivation of Begonia Gloire de Lorraine.

" " Harvard Botanic Garden (Robert Cameron, gardener), for Superior Cultivation of *Primula stellata* var. *alba*.

March 2. Oakes Ames, for *Coleus thyrsoideus*.

Spring Exhibition, March 19–22. Cyrus Lothrop (H. Cole, gardener), for Superior Cultivation of *Lælia flava*.

" " " " Anson Phelps Stokes, for *Asparagus Sprengeri* var. *compactus*.

" " " " M. H. Walsh, for Hardy Hybrid Climbing Rose Sweetheart.

Chrysanthemum Show, November 7–10. Mrs. John L. Gardner, for *Asparagus deflexus*.

" " " " Mrs. Cornelius Vanderbilt, for *Nerine flexuosa excellens*.

" " " " R. & J. Farquhar & Co., for *Ficus repens variegata*.

HONORABLE MENTION.

January 5. J. E. Rothwell, for *Cypripedium Longwoodense* (*C. Leeanum* var. *Masreelianum* × *C. Charlesworthii*).

" " Oakes Ames, for *Cypripedium James K. Polk* (*C. Chamberlainianum* × *C. niveum*).

" 12. Oakes Ames, for *Cypripedium* × *Chapmanii* (*C. Curtisii* × *C. bellatulum*).

" " J. E. Rothwell, for *Cypripedium* × *H. Graves, Jr.* (*C. Lawrenceanum* × *C. Marshallianum*).

February 16. Harvard Botanic Garden, for *Primula stellata* var. *compacta*.

" 23. Mrs. John L. Gardner, for Seedling Asparagus.

Spring Exhibition, March 19–22. Mrs. Warren H. Heustis, for Superior Cultivation of *Oxalis rosea*.

March 30. Harvard Botanic Garden, for *Asparagus schoberioides*.

Chrysanthemum Show, November 7–10. George McWilliam, for Heliconia Sport.

December 21. J. E. Rothwell, for Seedling Orchid, *Cattleya intermedia* × *Lælia cinnabarina*.

ARTHUR H. FEWKES,
JAMES WHEELER,
WM. J. MARTIN,
ROBERT CAMERON,
ROBERT MELROSE GREY,
} *Committee on Plants.*

REPORT

OF THE

COMMITTEE ON FLOWERS

FOR THE YEAR 1901.

By J. WOODWARD MANNING, CHAIRMAN.

The Report of the Flower Committee for the year 1901 must of necessity be short, owing to the lack of exhibits throughout the year.

Such exhibits as could be held were very creditable and attracted the usual amount of attention. Unfortunately, the Rose, Pæony and Dahlia Shows, which have interested the public so largely in the last few years, could not be held, but we have every reason to believe that there would have been very creditable exhibits in this line had there been opportunity to enter such.

The Spring Exhibition was rich in its display of forced Roses and Carnations.

The Chrysanthemum Show showed an advance in the careful culture of these beautiful flowers and proved that the limit of perfection was elastic and that what seemed impossible of improvement yet continued to show further excellence. A large number of new exhibitors made displays at this exhibition and the competition was even closer than it has been in past years. There seems to be no indication of lack of popularity in this flower this year.

With the added facilities that our new hall affords it would seem that we should be able to give the exhibitors the full allowance of room that is necessary that they may be able to display their exhibits to the best advantage, and also to enable the public to gain free access for the enjoyment of such exhibits.

We are hoping that the following year we shall be able to report the great improvement in display, as well as added interest on the part of the public, that would seem called for in view of the greatly increased facilities we now have for future exhibits.

Your Committee has awarded prizes to the money value of $979.00 during the year, leaving a balance of $1521.00 from which should be deducted the necessary amount to pay for the four Silver Medals, the three Silver Gilt Medals, two Bronze Medals and seven First Class Certificates of Merit.

PRIZES AND GRATUITIES AWARDED FOR FLOWERS.

1901.

JANUARY 5.

PRIMULA SINENSIS.— Display of fifty or more individual blooms:

First, Mrs. John L. Gardner	$2 00
Second, Mrs. John L. Gardner	1 00

FREESIAS.— Vase of fifty spikes:

First, Mrs. E. M. Gill	2 00

Gratuities:—

J. E. Rothwell, Display of Cypripediums	2 00
Mrs. E. M. Gill, Display	1 00

FEBRUARY 2.

VIOLETS.— Best collection of varieties, in bunches of fifty blooms each:

First, Norris F. Comley	4 00
Second, Norris F. Comley	3 00

CARNATIONS.— Display of cut blooms, with foliage, not less than six varieties:

First, M. A. Patten	8 00
Third, Miss Hattie B. Winter	4 00

CAMELLIAS.— Display of named varieties, cut flowers with foliage, not less than twelve blooms, in not less than six varieties:

First, James Comley	4 00
Second, James Comley	3 00

Gratuities:—

James Comley, Camellias	4 00
J. W. Howard, Camellias	3 00
W. J. Clemson, Two vases Freesias	2 00
Mrs. E. M. Gill, Display	2 00

FEBRUARY 9.

Gratuities:—

James Comley, Camellias	5 00
Mrs. E. M. Gill, Display	1 00

FEBRUARY 16.

Gratuity:—

James Comley, Display	6 00

FEBRUARY 23.

Gratuities:—

James E. Rothwell, Display of Orchids	1 00
Norris F. Comley, Violets	1 00
James Comley, Camellias	5 00
Mrs. E. M. Gill, Display	1 00

MARCH 2.

Gratuities:—

John L. Bird, *Acacia pubescens*	1 00
Mrs. E. M. Gill, Display	1 00

MARCH 9.

Gratuities:—

James Comley, Basket of Camellias	3 00
Mrs. E. M. Gill, Display	1 00

SPRING EXHIBITION.

MARCH 19, 20, 21 AND 22.

HYBRID PERPETUAL ROSES.— Twelve blooms, in not less than four named varieties:	
First, Mrs. A. W. Spencer	12 00
Six blooms, not less than three named varieties:	
First, Col. Charles Pfaff	6 00
Second, Mrs. A. W. Spencer	5 00
Twelve blooms of Ulrich Brunner:	
First, E. M. Wood & Co.	10 00
Second, John McFarland	8 00
TENDER ROSES, IN VASES.— Twelve blooms of American Beauty:	
First, E. M. Wood & Co.	15 00
Second, Exeter Rose Conservatories, Exeter, N. H.	12 00
Third, Briar Cliff Greenhouses, Scarboro, N. Y.	10 00

Twenty-five blooms of The Bride:	
First, E. M. Wood & Co.	10 00
Second, John Pritchard	8 00
Third, W. H. Elliott	6 00
Twenty-five blooms of Bridesmaid:	
First, E. M. Wood & Co.	10 00
Second, John Pritchard	8 00
Third, W. H. Elliott	6 00
Twenty-five blooms of Meteor:	
First, W. H. Elliott	10 00
Twenty-five blooms of Souvenir de Président Carnot:	
First, W. H. Elliott	10 00
Twenty-five blooms of Liberty:	
First, E. M. Wood & Co.	12 00
Second, W. H. Elliott	8 00
CARNATIONS.— Vase of one hundred cut blooms, with foliage, not less than six varieties:	
First, M. A. Patten	8 00
Second, Peter Fisher	6 00
Third, Col. Charles Pfaff	4 00
Twenty-five blooms of any named Crimson variety:	
Second, Briar Cliff Greenhouses, for Gen. Maceo	2 00
Twenty-five blooms of any named Dark Pink variety, (William Scott or darker):	
First, Peter Fisher, for Mrs. Thomas W. Lawson	3 00
Second, Briar Cliff Greenhouses, for Mrs. Thomas W. Lawson	2 00
Twenty-five blooms of any named Light Pink variety, (Lighter than William Scott):	
Second, Briar Cliff Greenhouses, for Maud Dean	2 00
Twenty-five blooms of any named Scarlet variety:	
First, Briar Cliff Greenhouses, for G. H. Crane	3 00
Twenty-five blooms of any named White variety:	
First, Briar Cliff Greenhouses, for White Cloud	3 00
Twenty-five blooms of any named Yellow Variegated variety:	
First, Briar Cliff Greenhouses, for Gold Nugget	3 00
Second, S. J. Goddard, for Eldorado	2 00
Twenty-five blooms of any named White Variegated variety:	
First, Briar Cliff Greenhouses, for G. M. Bradt	3 00
VIOLETS.—Bunch of one hundred blooms of Lady Hume Campbell:	
First, D. T. Harrigan	3 00
Second, Norris F. Comley	2 00
Bunch of one hundred blooms of Marie Louise:	
First, Harry S. Rand	3 00
Second, Norris F. Comley	2 00
Bunch of one hundred blooms of any other double variety:	
First, Norris F. Comley	3 00

Bunch of one hundred blooms of any single variety:

First, William Sim	3 00
Second, William Sim	2 00

Gratuities:—

Col. Charles Pfaff, Magna Charta Roses	8 00
The Floral Exchange, Inc., Philadelphia, Pa., Vase of Rose Queen of Edgely	5 00
Miss M. S. Walker, Vase of Roses	8 00
Col. Charles Pfaff, Display of Roses	3 00
Charles Evans, Mignonette	2 00
C. H. Souther, Vase of Antirrhinums	1 00
Norris F. Comley, Lilacs	2 00
Mrs. E. M. Gill, Basket of Flowers	3 00
James Comley, Display	6 00
Mrs. A. W. Spencer, Display	6 00
Mrs. E. M. Gill, "	2 00

MARCH 30.

Gratuity:—

O. B. Hall, Seedling Petunias	1 00

CHRYSANTHEMUM SHOW.

NOVEMBER 5, 6, 7 AND 8.

☞ This was the opening exhibition held by the Society in its new halls and includes the postponed **Annual Exhibition of Plants and Flowers** and **Annual Exhibition of Fruits and Vegetables,** which were scheduled for September.

Special Prizes.

Josiah Bradlee Fund.

CHRYSANTHEMUMS.— Twenty-five blooms, of twenty-five distinct varieties, named, a piece of plate or value in money:

First, Mrs. B. P. Cheney	$18 00
Second, Miss E. J. Clark	12 00
Third, Col. Charles Pfaff	8 00
Fourth, Robert Laurie	6 00

Six vases, of six named varieties, ten blooms each:

First, Mrs. A. W. Spencer	30 00
Second, Mrs. B. P. Cheney	25 00
Third, Miss E. J. Clark	20 00
Fourth, Waban Rose Conservatories	15 00

Henry A. Gane Memorial Fund.

Best twelve specimen blooms of any of the Seedling Chrysanthemums originated by the late Henry A. Gane:	
First, Waban Rose Conservatories	20 00
Second, Mrs. A. W. Spencer	10 00

Society's Prizes.

Twelve blooms, Incurved, named, in vases:	
First, E. S. Converse	8 00
Twelve blooms, Japanese, named, in vases:	
First, Mrs. B. P. Cheney	10 00
Twelve blooms, Japanese Incurved, named, in vases:	
First, Mrs. B. P. Cheney	10 00
Second, Peter B. Robb	6 00
Third, Col. Charles Pfaff	4 00
Twelve blooms, Anemone, named, in vases:	
First, E. S. Converse	8 00
Second, Dr. C. G. Weld	6 00
Third, C. H. Souther	4 00
Six blooms, Incurved, named, in vases:	
First, Dr. C. G. Weld	5 00
Second, E. S. Converse	4 00
Third, C. H. Souther	2 00
Six blooms, Japanese, named, in vases:	
First, Mrs. B. P. Cheney	6 00
Second, Peter B. Robb	4 00
Third, E. S. Converse	2 00
Six blooms, Japanese Incurved, named, in vases:	
First, Mrs. B. P. Cheney	6 00
Second, Col. Charles Pfaff	4 00
Third, E. S. Converse	2 00
Six blooms, Reflexed, named, in vases:	
First, Mrs. B. P. Cheney	6 00
Second, Peter B. Robb	4 00
Third, E. S. Converse	2 00
Six blooms, Anemone, named, in vases:	
First, E. S. Converse	5 00
Second, E. S. Converse	4 00
Vase of ten blooms on long stems, Pink, named:	
First, Mrs. A. W. Spencer, for Viviand Morel	10 00
Second, Robert Laurie	8 00
Third, C. D. Sias	6 00
Vase of ten blooms on long stems, Red, named:	
First, Mrs. A. W. Spencer	10 00
Second, Miss E. J. Clark	8 00
Third, Col. Charles Pfaff	6 00

Vase of ten blooms on long stems, White, named:	
First, Mrs. A. W. Spencer	10 00
Second, Peter B. Robb	8 00
Third, Robert Laurie	6 00
Vase of ten blooms on long stems, Yellow, named:	
First, Mrs. A. W. Spencer	10 00
Second, Robert Laurie	8 00
Third, Col. Charles Pfaff	6 00
Vase of ten blooms on long stems, any other color:	
First, Mrs. A. W. Spencer	10 00
Second, Robert Laurie	8 00
Third, Miss E. J. Clark	6 00
Vase of blooms on long stems, arranged in the Society's large China vases; prizes to be repeated every day during the exhibition:	
First, Col. Charles Pfaff	10 00
Second, Mrs. A. W. Spencer	9 00
Third, E. N. Peirce & Sons	8 00
Fourth, Norris F. Comley	7 00
DAHLIAS.— Cactus, twelve blooms, named varieties:	
First, W. H. Symonds	4 00
Decorative, twelve blooms, named varieties:	
First, W. H. Symonds	4 00
Show, six blooms, named varieties:	
First, W. H. Symonds	2 00
Second, W. H. Symonds	1 00
Fancy, six blooms, named varieties:	
First, W. H. Symonds	2 00
General Display, one hundred or more bottles, in the Society's racks, arranged for effect:	
First, W. H. Symonds	12 00

Gratuities:—

E. S. Converse, Display of Plumed Chrysanthemums	2 00
Mrs. E. M. Gill, Display of Pompon Chrysanthemums	1 00
Mrs. E. M. Gill, Display of Chrysanthemums	5 00
Mrs. A. W. Spencer, Three Vases of Chrysanthemums	3 00
Mrs. A. W. Spencer, Two Vases of Chrysanthemums	6 00
Carl Jurgens, Vase of twenty-five American Beauty Roses	10 00
John N. May, Rose of Mrs. Oliver Ames	2 00
M. A. Patten, Display of Carnations	8 00
James Comley, Display	8 00
John Thomas, Display	4 00
Blue Hill Nursery, Display	2 00

AWARDS OF NOVEMBER 8.

CHRYSANTHEMUMS.—Vase of blooms on long stems, arranged in the Society's large China vases:

First, Mrs. A. W. Spencer	10 00
Second, Col. Charles Pfaff	9 00
Third, E. N. Peirce & Sons	8 00
Fourth, Norris F. Comley	7 00

Gratuities:—

Col. Charles Pfaff, Display of Orchids	3 00
Mrs. B. P. Cheney, Display	8 00

AWARDS OF NOVEMBER 9.

CHRYSANTHEMUMS.—Vase of blooms on long stems, arranged in the Society's large China vases:

First, Col. Charles Pfaff	10 00
Second, Mrs. A. W. Spencer	9 00
Third, E. N. Peirce & Sons	8 00
Fourth, Norris F. Comley	7 00

VIOLETS.—Single, collection of varieties, fifty blooms each:

First, Norris F. Comley	5 00

Double, collection of varieties, fifty blooms each:

First, Norris F. Comley	5 00

AWARDS OF NOVEMBER 10.

CHRYSANTHEMUMS.—Vase of blooms on long stems, arranged in the Society's large China vases:

First, Col. Charles Pfaff	10 00
Second, Mrs. A. W. Spencer	9 00
Third, E. N. Peirce & Sons	8 00
Fourth, Norris F. Comley	7 00

VASE OF FLOWERS.—For table decoration, on the last day of the exhibition:

First, Mrs. E. M. Gill	4 00
Second, Miss Hattie B. Winter	3 00

SILVER GILT MEDALS.

February 2. Oakes Ames, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Spring Exhibition, March 19–22. Mrs. F. L. Ames, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Chrysanthemum Show, November 7–10. James E. Rothwell, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

SOCIETY'S SILVER MEDALS.

Spring Exhibition, March 19–22. James E. Rothwell, second prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

" " " " Anson Phelps Stokes, for Climbing Rose, Gold or Ophir.

Chrysanthemum Show, November 7–10. James Comley, for Pompon Chrysanthemums.

" " " " Col. Charles Pfaff, for largest number of first prizes for Vase of Chrysanthemums.

BRONZE MEDALS.

October 5. George McWilliam, for *Lælio-Cattleya* × *Catherine L. Whitin* var. *inversum*, and *Cattleya Harrisonii* × *Lælia purpurata*, Seedling.

Chrysanthemum Show, November 7–10. Mrs. A. W. Spencer, for largest number of second prizes for Vase of Chrysanthemums.

FIRST CLASS CERTIFICATES OF MERIT.

January 12. Harvard Botanic Garden, for *Euphorbia pulcherrima plenissima*.

" 26. H. T. Clinkaberry, Trenton, N. J., for *Cypripedium Thayerianum Trenton* var. (*C. Lawrenceanum* Pitcher's var. × *Boxallii atratum*).

" " H. T. Clinkaberry, for *Cypripedium Garret A. Hobart*, (*C. Chantinii* × *C. Lathamianum*).

" " H. T. Clinkaberry, for *Cypripedium Leeanum Mrs. Clinkaberry*, *Leeanum* var.

Chrysanthemum Show, Nov. 7–10. Peter Fisher, for Carnation Governor Wolcott.

" " " " Peter Fisher, for Carnation Nelson Fisher

" " " " Albert Roper, for Carnation Fair Maid

HONORABLE MENTION.

January 5. J. E. Rothwell, for *Cypripedium Niobe* (*C. Spicerianum* × *C. Fairieanum*).

February 16. Harvard Botanic Garden, for *Bougainvillea speciosa* var. *splendens*.

Chrysanthemum Show, November 7–10. Peter Fisher, for Carnation Evangeline.

" " " " Peter Fisher, for Carnation Mrs. M. A. Patten

Chrysanthemum Show, November 7-10. Peter Fisher, for Carnation Enchantress.

" " " " D. Carmichael, for Carnation Symphony.

J. WOODWARD MANNING,
MICHAEL H. NORTON,
KENNETH FINLAYSON,
FREDERICK S. DAVIS,
JAMES COMLEY,
} *Committee on Flowers.*

REPORT

OF THE

COMMITTEE ON FRUITS

FOR THE YEAR 1901.

By E. W. WOOD, CHAIRMAN.

The fruits in general cultivation in New England passed the winter of 1900–1901 with comparatively little injury. The peach buds in some localities were injured more or less, but generally there were enough live buds left to produce a fair crop and the southern fruit was supplemented by an unusual amount of native fruit.

The apple crop was almost an entire failure; there was more than the usual amount of bloom for the off year but the continued cold wet weather prevented fertilization of the blossoms and the set of fruit was exceedingly light. The conditions have been favorable for a vigorous growth of the trees the past season, and barring unfavorable conditions at the time of blooming, an abundant crop may be expected the coming year.

It is conceded by intelligent fruit growers that there is no place where the pear can be grown more successfully than in the vicinity of Boston. The exhibitions of this fruit have continued to improve in quality since the change in the schedule. Instead of giving prizes for collections of twenty, fifteen and ten varieties the premiums are awarded for single dishes being more in number and larger in amount for the more desirable varieties. Among growers for market the varieties are closely confined to six or eight, several others being added for the home garden to furnish a continuous supply during the season.

Owing to the obligation to vacate the Society's building on Tremont Street and the delay in completing the present building, the Strawberry exhibition and the Summer exhibits of the small fruits were omitted the past season. The scheduled exhibition for November 7th was the first fruit exhibit in the new building and the Society has never had a finer show of late fall and winter fruits. Apples were limited in quantity but were good in quality. There was a large display of pears and many exceptionally fine specimens.

The appropriation for the Fruit Committee was seventeen hundred dollars; there have been awarded in premiums and gratuities six hundred and fifty-six dollars, leaving an unexpended balance of ten hundred and forty-four dollars.

PRIZES AND GRATUITIES AWARDED FOR FRUITS.

1901.

SPRING EXHIBITION.

MARCH 19, 20, 21 AND 22.

WINTER APPLES.— Baldwin:	
First, E. M. Bruce	$3 00
Second, C. F. Boyden	2 00
Third, W. H. Boyden	1 00
Northern Spy:	
First, Hiram Heyworth	3 00
Second, C. F. Boyden	2 00
Third, E. M. Bruce	1 00
Roxbury Russet:	
First, W. H. Boyden	3 00
Second, H. R. Kinney	2 00
Third, A. E. Hartshorn	1 00
Tompkins King:	
First, C. F. Boyden	3 00
Second, F. J. Kinney	2 00
Third, E. M. Bruce	1 00
Any other variety:	
First, E. M. Bruce, Sutton	3 00
Second, A. E. Hartshorn, Sutton	2 00
Third, F. J. Kinney, Palmer	1 00

WINTER PEARS.—Any variety:

First, George V. Fletcher, Dana's Hovey	3 00
Second, George V. Fletcher, Anjou	2 00

STRAWBERRIES.— One pint:

First, Francis Blake	3 00

Gratuity:—

George C. Rice, Collection of Apples	1 00

CHRYSANTHEMUM EXHIBITION.

NOVEMBER 7, 8, 9 AND 10.

☞ This was the opening exhibition held by the Society in its new halls and includes the postponed **Annual Exhibition of Plants and Flowers** and **Annual Exhibition of Fruits and Vegetables**, which were scheduled for September.

Special Prizes.

Theodore Lyman Fund.

For the heaviest and best ripened bunch of any Foreign Black Grape:

First, George McWilliam, Gros Guillaume	$15 00
Second, George McWilliam, Black Alicante	10 00

Society's Prizes.

FOREIGN GRAPES.—Two bunches Black Alicante:

First, George McWilliam	5 00

Lady Downes:

First, George McWilliam	5 00

Any other variety:

First, George McWilliam	5 00
Second, Mrs. John C. Whitin	4 00

Special Prizes.

Samuel Appleton Fund.

APPLES.—Baldwin, E. F. Locke	5 00
Hubbardston, Artemas Frost	5 00
PEARS.—Bosc, F. W. Damon	5 00
Sheldon, George V. Fletcher	5 00

Benjamin V. French Fund.

APPLES.—Gravenstein, Warren Fenno	5 00
Rhode Island Greening, A. E. Hartshorn	5 00

Marshall P. Wilder Fund.

PEARS.—Anjou:

First, A. T. Brown	4 00
Second, F. W. Damon	3 00
Third, A. K. Gould	2 00
Fourth, Warren Fenno	1 00

Bartlett:

First, George V. Fletcher	4 00
Second, Varnum Frost	3 00
Third, J. L. Bird	2 00

GRAPES.—Concord, twelve bunches:

First, C. F. Hayward	4 00
Second, E. E. Lincoln	3 00
Third, H. R. Kinney	2 00

Worden:

First, H. R. Kinney	4 00
Second, J. S. Chase	3 00

Theodore Lyman Fund.

APPLES.—Baldwin:

First, Warren Fenno	4 00
Second, J. C. Stone	3 00
Third, C. H. Teele	2 00

Fletcher Russet:

First, George V. Fletcher	3 00

Gravenstein:

First, L. B. Dodge	4 00
Second, J. B. Shurtleff, Jr.	3 00
Third, Mrs. A. E. Underwood	2 00

Hubbardston:

First, E. F. Locke	4 00
Second, Artemas Frost	3 00
Third, Warren Fenno	2 00

Hunt Russet:

First, William H. Hunt	3 00
Second, W. H. Teele	2 00

Mackintosh:

First, George C. Rice	4 00
Second, George V. Fletcher	3 00
Third, H. K. W. Hall	2 00

Maiden's Blush:

First, H. R. Kinney	3 00

Mother:

First, Ellwanger & Barry	3 00

Northern Spy:	
First, J. Fletcher Stott	3 00
Second, George V. Fletcher	2 00
Third, George C. Rice	1 00
Porter:	
First, Mrs. A. E. Underwood	3 00
Second, M. W. Chadbourne	2 00
Pound Sweet:	
First, George C. Rice	3 00
Second, George V. Fletcher	2 00
Rhode Island Greening:	
First, Warren Fenno	4 00
Second, H. R. Kinney	3 00
Third, A. E. Hartshorn	2 00
Roxbury Russet:	
First, A. E. Hartshorn	4 00
Second, H. R. King	3 00
Third, H. R. Kinney	2 00
Sutton:	
First, A. E. Hartshorn	3 00
Tolman's Sweet:	
First, Artemas Frost	3 00
Second, Mrs. A. E. Underwood	2 00
Third, H. W. Anderson	1 00
Tompkins King:	
First, Oliver B. Wyman	3 00
Second, P. W. Costain	2 00
Third, George C. Rice	1 00
Washington Royal:	
Second, H. R. King	2 00
Third, A. E. Hartshorn	1 00
Wealthy:	
Third, George C. Rice	1 00
Any other variety:	
First, George C. Rice, Fallawater	3 00
CRAB APPLES.—Hyslop, twenty-four specimens:	
First, M. W. Chadbourne	2 00
Second, A. E. Hartshorn	1 00
Any other variety:	
First, S. H. Warren	2 00

Special Prizes offered by the Society.

PEARS.—Anjou, A. K. Gould	5 00
NATIVE GRAPES.—Twelve bunches, any variety, H. R. Kinney	5 00

Regular Prizes.

PEARS.—Angouleme:	
First, A. T. Brown	4 00
Second, F. W. Damon	3 00
Third, Elbridge Torrey	2 00
Fourth, Warren Fenno	1 00
Bosc:	
First, J. B. Shurtleff, Jr.	4 00
Second, A. T. Brown	3 00
Third, F. W. Damon	2 00
Fourth, Charles W. Libbey	1 00
Clairgeau:	
First, Charles F. Curtis	3 00
Second, Warren Heustis & Son	2 00
Third, F. W. Damon	1 00
Comice:	
First, Warren Fenno	3 00
Dana's Hovey:	
First, A. T. Brown	4 00
Second, F. W. Damon	3 00
Third, Warren Fenno	2 00
Fourth, Warren Heustis & Son	1 00
Diel:	
First, A. T. Brown	3 00
Second, J. C. Stone	2 00
Third, Warren Fenno	1 00
Fulton:	
First, E. S. Converse	3 00
Second, Warren Fenno	2 00
Third, J. L. Bird	1 00
Hardy:	
First, Warren Fenno	3 00
Howell:	
First, Warren Fenno	3 00
Josephine of Malines:	
First, Warren Fenno	3 00
Lawrence:	
First, A. T. Brown	3 00
Second, Warren Fenno	2 00
Third, F. W. Damon	1 00
Louise Bonne of Jersey:	
First, Warren Fenno	3 00
Marie Louise:	
First, Elbridge Torrey	3 00
Second, A. T. Brown	2 00
Third, Warren Fenno	1 00

Merriam:	
First, Charles E. Swain	3 00
Second, Warren Heustis & Son	2 00
Third, Warren Fenno	1 00
Onondaga:	
First, Warren Fenno	3 00
Second, J. L. Bird	2 00
Third, Charles B. Travis	1 00
Seckel:	
First, A. T. Brown	4 00
Second, Mrs. Charles Whittier	3 00
Third, F. W. Damon	2 00
Sheldon:	
First, Elbridge Torrey	4 00
Second, A. T. Brown	3 00
Third, George E. Freeman	2 00
Superfin:	
First, Warren Fenno	3 00
Urbaniste:	
First, A. T. Brown	3 00
Second, J. L. Bird	2 00
Third, M. W. Chadborune	1 00
Vicar:	
First, A. T. Brown	3 00
Winter Nelis:	
First, A. T. Brown	3 00
Second, Warren Fenno	2 00
Any other variety:	
First, Warren Fenno, Pratt	3 00
Second, Warren Fenno, St. Michael Archangel	2 00
Third, Elbridge Torrey, Bezi de la Motte	1 00
QUINCES.—Champion:	
First, L. F. Priest	3 00
Second, Charles S. Smith	2 00
Third, J. S. Chase	1 00
Orange:	
First, George V. Fletcher	3 00
Second, Warren Fenno	2 00
Pear:	
First, George V. Fletcher	3 00
Rea:	
First, J. S. Chase	3 00
Second, I. H. Locke	2 00
Any other variety:	
First, J. S. Chase, Meech	3 00
PLUMS.—Any variety:	
First, H. R. Kinney	2 00

NATIVE GRAPES.—Six bunches of Brighton:

First, Charles W. Libbey	3 00
Second, H. R. Kinney	2 00
Third, J. S. Chase	1 00
Delaware:	
First, Charles W. Libbey	4 00
Second, J. S. Chase	3 00
Third, H. R. Kinney	2 00
Eumelan:	
Second, J. S. Chase	2 00
Herbert:	
First, Charles W. Libbey	3 00
Second, J. S. Chase	2 00
Lindley:	
First, Charles W. Libbey	3 00
Niagara:	
First, C. F. Hayward	3 00
Pocklington:	
First, H. R. Kinney	4 00
Second, J. S. Chase	3 00
Third, Charles W. Libbey	2 00
Prentiss:	
First, J. S. Chase	3 00
Any other variety:	
First, Charles W. Libbey, Moore's Diamond	3 00
Second, H. R. Kinney, Salem	2 00
Third, J. S. Chase, Diana	1 00

FOREIGN GRAPES.— Two bunches of any variety, cold house culture:

First, E. S. Converse	5 00

CRANBERRIES.—Half-peck:

First, L. J. Fosdick	3 00
Second, Charles P. Trowbridge	2 00
Third, A. L. Plimpton	1 00

Benjamin V. French Fund.

APPLES. — Baldwin, A. E. Hartshorn	5 00
Rhode Island Greening, George V. Fletcher	5 00

Society's Prizes.

APPLES. — Baldwin:

First, F. O. Barrett	3 00
Second, Warren Fenno	2 00
Third, C. H. Teele	1 00
Danvers Sweet:	
First, Warren Fenno	3 00

Fletcher Russet:	
First, George V. Fletcher	3 00
Second, Charles F. Curtis	2 00
Hubbardston:	
First, M. W. Chadbourne	3 00
Second, A. E. Hartshorn	2 00
Third, Warren Fenno	1 00
Northern Spy:	
First, C. W. Morrill	3 00
Second, George C. Rice	2 00
Third, Warren Fenno	1 00
Rhode Island Greening:	
First, Mrs. A. E. Underwood	3 00
Second, A. E. Hartshorn	2 00
Third, H. R. King	1 00
Roxbury Russet:	
First, E. S. Converse	3 00
Second, A. E. Hartshorn	2 00
Third, George V. Fletcher	1 00
Tolman's Sweet:	
First, George V. Fletcher	3 00
Second, Mrs. A. E. Underwood	2 00
Tompkins King:	
First, George C. Rice	3 00
Second, A. E. Hartshorn	2 00
Any other variety:	
First, Mrs. A. E. Underwood, Bellflower	3 00
Second, M. Martin, Bellflower	2 00
Third, A. E. Hartshorn, Sutton	1 00
PEARS. — Angouleme:	
First, Warren Fenno	4 00
Second, A. T. Brown	3 00
Third, J. L. Bird	2 00
Fourth, Edwin A. Hall	1 00
Anjou:	
First, William Milman	4 00
Second, Warren Fenno	3 00
Third, Charles E. Swain	2 00
Fourth, F. W. Damon	1 00
Clairgeau:	
First, Warren Fenno	3 00
Second, A. K. Gould	2 00
Third, J. S. Chase	1 00
Comice:	
First, Warren Fenno	4 00
Second, J. L. Bird	3 00
Third, A. K. Gould	2 00

Dana's Hovey:	
First, M. Sullivan	4 00
Second, E. W. Wood	3 00
Third, Warren Fenno	2 00
Fourth, Warren Heustis & Son	1 00
Diel:	
First, Charles E. Swain	3 00
Second, A. K. Gould	2 00
Third, Edwin A. Hall	1 00
Glout Morceau:	
First, Warren Fenno	3 00
Second, Edwin A. Hall	2 00
Josephine of Malines:	
First, Warren Fenno	3 00
Second, J. L. Bird	2 00
Langelier:	
First, William H. Spooner	3 00
Second, A. T. Brown	2 00
Third, Warren Fenno	1 00
Lawrence:	
First, Charles E. Swain	3 00
Second, Warren Fenno	2 00
Third, M. Sullivan	1 00
Vicar:	
First, Mary B. Mendum	3 00
Second, E. S. Converse	2 00
Winter Nelis:	
First, Warren Fenno	3 00
Second, A. A. Johnson	2 00
Third, E. S. Converse	1 00
Any other variety:	
First, William Milman, Mount Vernon	3 00
Second, Warren Fenno, Bosc	2 00
Third, Varnum Frost, Bartlett	1 00
QUINCES. — Any variety:	
First, Warren Fenno, Orange	3 00
Second, E. M. Bruce	2 00
Third, A. E. Hartshorn	1 00
FOREIGN GRAPES. — Two bunches of any variety:	
First, Mrs. John C. Whitin, Black Alicante	5 00
Second, Mrs. John C. Whitin, Lady Downes	4 00

Gratuities: —

C. C. Shaw, Collection of Apples	5 00
C. H. Hovey, South Pasadena, Cal., Pomegranates and Persimmons	3 00

E. W. Wood,
Charles F. Curtis,
O. B. Hadwen,
Warren Fenno,
J. Willard Hill,
Sumner Coolidge,
George F. Pierce,
} *Committee on Fruits.*

REPORT

OF THE

COMMITTEE ON VEGETABLES

FOR THE YEAR 1901.

By WARREN HOWARD HEUSTIS, CHAIRMAN.

The exhibitions held during the past year were very successful and in almost every case the prizes have been fully competed for. As a matter of fact, we have, of necessity, to repeat the exhibits from week to week, owing to the limited variety of vegetables during certain portions of the year. At the same time, we get very good specimens and the prizes are quite evenly distributed, no person succeeding in taking prizes on the same variety week after week. The interest displayed on other days than those scheduled for prizes is quite strong and we should be disappointed to see these shows given up. It was stated that we should not be able to get a full exhibit at the new hall, but we were very much gratified to find that we had every foot of space that was allotted us filled, and also had an overflow of vegetables in the basement which would have been a credit to any society, but we are sorry to say that very few people saw them.

There have been no vegetables shown that were superior or deserving of special mention over preceding years, but we would mention six lots of cauliflower grown by four different parties; we think we never saw a more uniform lot.

We are pleased to report that the Executive Committee has seen fit not to reduce the appropriation for the coming year, and we shall endeavor to keep up the usual high standard as in the past. The large exhibits from Worcester and Taunton are very gratifying and prove that where there are prizes to be awarded there will be no lack of competitors.

Five hundred and fifty-seven dollars have been awarded for prizes and gratuities during the past year, leaving a balance of six hundred and forty-three dollars, out of which a Silver Medal and a Bronze Medal are to be paid for.

PRIZES AND GRATUITIES AWARDED FOR VEGETABLES.

1901.

JANUARY 5.

RADISHES.—Four bunches of any variety:

First, A. E. Hartshorn	$3 00

SALSIFY.—Twelve specimens:

First, W. Heustis & Son	3 00
Second, George D. Moore	2 00
Third, A. E. Hartshorn	1 00

CUCUMBERS.—Pair of any variety:

First, Francis Blake, White Spine	3 00
Second, Mrs. John L. Gardner, Telegraph	2 00

CAULIFLOWERS.—Four specimens:

First, DeSouza Brothers	3 00
Second, C. M. Handley	2 00

CELERY.—Four roots:

First, H. R. Kinney, Pascal	3 00
Second, A. E. Hartshorn, Pascal	2 00
Third, W. Heustis & Son, Boston Market	1 00

LETTUCE.—Four heads of Tennisball:

First, Wyman Brothers	3 00
Second, J. C. Stone	2 00
Third, A. E. Hartshorn	1 00

PARSLEY.—Two quarts:

First, W. J. Clemson, Chappell's Matchless	2 00
Second, W. J. Clemson, Moss Curled	1 00

MUSHROOMS.—Twenty-four specimens:

First, H. R. Kinney	3 00
Second, E. S. Converse	2 00

TOMATOES.—Twelve specimens:

First, W. C. Winter, May's Favorite	3 00
Second, Francis Blake, Best of All	2 00
Third, W. C. Winter, Stone	1 00

Gratuities:—

A. E. Hartshorn, Collection	3 00
W. Heustis & Son, "	2 00

FEBRUARY 2.

RADISHES.—Four bunches of any variety:

First, Varnum Frost	3 00
Second, H. R. Kinney	2 00
Third, A. E. Hartshorn	1 00

SALSIFY.—Twelve specimens:

First, George D. Moore	3 00
Second, W. Heustis & Son	2 00
Third, A. E. Hartshorn	1 00

CUCUMBERS.—Pair of any variety:

First, Francis Blake	3 00

CELERY.—Four roots:

First, George D. Moore, Pascal	3 00
Second, H. R. Kinney, "	2 00
Third, W. Heustis & Son, "	1 00

DANDELIONS.—Peck:

First, A. E. Hartshorn	3 00

LETTUCE.—Four heads of Tennisball:

First, Varnum Frost	3 00
Second, Wyman Brothers	2 00
Third, George D. Moore	1 00

MUSHROOMS.—Twenty-four specimens:

First, H. R. Kinney	3 00

TOMATOES.—Twelve specimens:

First, Francis Blake, Best of All	3 00
Second, W. C. Winter, May's Favorite	2 00
Third, W. C. Winter, Stone	1 00

Gratuities:—

A. E. Hartshorn, Collection	2 00
George D. Moore, "	2 00

FEBRUARY 9.

Gratuity:—

W. Heustis & Son, Celery	1 00

FEBRUARY 16.

Gratuities:—

A. Nixon, Celery	1 00
George D. Moore, Collection	1 00

FEBRUARY 23.

Gratuities:—

Wyman Brothers, Lettuce	1 00
W. W. Rawson, Collection	1 00

MARCH 2.

Gratuities:—

George D. Moore, Lettuce	1 00
A. Nixon, Radishes	1 00

MARCH 9.

Gratuities:—

George D. Moore, Lettuce	1 00
W. W. Rawson, "	1 00

MARCH 16.

Gratuity:—

George D. Moore, Lettuce	1 00

SPRING EXHIBITION.

MARCH 19, 20, 21, AND 22.

RADISHES.—Four bunches of Turnip Rooted:	
First, H. R. Kinney	2 00
Second, Varnum Frost	1 00
CUCUMBERS.—Pair of White Spine:	
First, Francis Blake	3 00
Second, E. M. Bruce	2 00
SPINACH.—Half-peck:	
First, Hon. Aaron Low	3 00
DANDELIONS.—Peck:	
First, A. E. Hartshorn, French Thick-leaved	3 00
Second, A. E. Hartshorn, Improved American	2 00
LETTUCE.—Four heads of Tennisball:	
First, George D. Moore	3 00
Second, A. E. Hartshorn	2 00
Third, H. R. Kinney	1 00
WATER CRESS.—Two quarts:	
First, A. E. Hartshorn	2 00
PARSLEY.—Two quarts:	
First, S. J. Goddard, Chappell's Matchless	2 00
Second, A. E. Hartshorn, Moss Curled	1 00
MUSHROOMS.—Twenty-four specimens:	
First, H. R. Kinney	3 00
RHUBARB.—Twelve stalks:	
First, George D. Moore	3 00
TOMATOES.—Twelve specimens:	
First, W. J. Clemson, Frogmore	3 00
Second, W. J. Clemson, Best of All	2 00
Third, Miss M. S. Walker, Essex Hybrid	1 00

Gratuities:—

Hon. Aaron Low, Collection	5 00
W. Heustis & Son, "	5 00
A. E. Hartshorn, "	3 00
W. J. Clemson, "	1 00
George D. Moore, "	1 00

MARCH 30.

Gratuity:—

Hon. Aaron Low, Spinach	1 00

APRIL 6.

BEETS.—Turnip Rooted, twelve specimens:	
First, George D. Moore	3 00
Second, A. Nixon	2 00
PARSNIPS.—Twelve specimens:	
First, George D. Moore	3 00
Second, A. E. Hartshorn	2 00
Third, W. Warburton	1 00
RADISHES.—Four bunches:	
First, A. E. Hartshorn	2 00
Second, W. W. Rawson	1 00
LETTUCE.—Four heads of Tennisball:	
First, George D. Moore	3 00
Second, W. W. Rawson	2 00
Third, Wyman Brothers	1 00
CUCUMBERS.—Pair of White Spine:	
First, Varnum Frost	3 00
Second, E. M. Bruce	2 00
Third, W. W. Rawson	1 00
Any other variety:	
First, Mrs. J. L. Gardner	3 00
Second, E. M. Bruce	2 00

Gratuities:—

Hon. Aaron Low, Spinach	1 00
Mrs. F. L. Ames, Tomatoes	1 00
A. E. Hartshorn, Collection	1 00
George D. Moore, "	1 00
W. Heustis & Son, "	1 00
Wyman Brothers, "	1 00

CHRYSANTHEMUM SHOW.

NOVEMBER 7, 8, 9, AND 10.

☞ This was the opening exhibition held by the Society in its new halls and includes the postponed **Annual Exhibition of Plants and Flowers** and **Annual Exhibition of Fruits and Vegetables,** which were scheduled for September.

ANNUAL EXHIBITION.

SEPTEMBER 26 AND 27.

POTATOES.—Best collection new seedling varieties:

Hon. Aaron Low . . . . . The Society's Silver Medal.

For the second best:

Hon. Aaron Low . . . . . The Society's Bronze Medal.

BEETS.—Twelve Turnip Rooted:

First, E. L. Lewis, Edwards 3 00
Second, W. Heustis & Son, Egyptian 2 00
Third, A. E. Hartshorn, Edwards 1 00

CARROTS.—Twelve Long Orange:

First, A. E. Hartshorn 3 00
Second, W. Warburton 2 00
Third, W. J. Clemson 1 00

Twelve Intermediate:

First, A. E. Hartshorn 3 00
Second, W. Heustis & Son 2 00
Third, Joseph Thorpe 1 00

PARSNIPS.—Twelve Long:

First, A. E. Hartshorn 3 00
Second, W. J. Clemson 2 00
Third, George D. Moore 1 00

POTATOES.—Carmen No. 1:

First, H. E Rich 3 00
Second, H. W. Anderson 2 00
Third, Hon. Aaron Low 1 00

Clark:

First, H. R. Kinney 3 00
Second, H. W. Anderson 2 00
Third, Hon. Aaron Low 1 00

Early Fortune:

First, H. W. Anderson 3 00
Second, Hon. Aaron Low 2 00

Hebron:

First, F. J. Kinney 3 00
Second, H. E. Rich 2 00
Third, H. W. Anderson 1 00

Rose:

First, H. R. Kinney 3 00
Second, H. W. Anderson 2 00

Any other variety:

First, F. J. Kinney, Sir Walter Raleigh 3 00
Second, Hon. Aaron Low, " 2 00
Third, H. W. Anderson, Snowflake 1 00

SALSIFY.—Twelve specimens:

First, George D. Moore	3 00
Second, W. J. Clemson	2 00
Third, H. R. King	1 00

TURNIPS.—Twelve Flat:

First, Hon. Aaron Low, White Milan	3 00
Second, Hon. Aaron Low, Purple Milan	2 00
Third, Hon. Aaron Low, Purple Strap Leaf	1 00

Swedish:

First, Charles H. Brewster	3 00
Second, H. R. King	2 00
Third, H. R. King	1 00

ONIONS.—Twelve Danvers:

First, E. M. Bruce	3 00
Second, Charles Scully	2 00
Third, W. Warburton	1 00

Red:

First, E. M. Bruce	3 00
Second, A. E. Hartshorn	2 00
Third, H. E. Rich	1 00

White:

First, H. E. Rich	2 00
Second, A. E. Hartshorn	1 00

Any other variety:

First, E. M. Bruce	3 00
Second, E. L. Lewis	2 00

SQUASHES.—Three Bay State:

First, E. L. Lewis	3 00

Hubbard:

First, J. C. Stone	3 00
Second, A. E. Hartshorn	2 00
Third, A. F. Coolidge	1 00

Hybrid Turban:

First, E. L. Lewis	3 00

Marblehead:

First, E. L. Lewis	3 00

Marrow:

First, Varnum Frost	3 00
Second, E. L. Lewis	2 00

Any other variety:

First, E. L. Lewis	3 00
Second, A. E. Hartshorn	2 00
Third, Hon. Aaron Low	1 00

CUCUMBERS.—Pair of White Spine:

First, W. A. Bruce	3 00

Any other variety:

First, W. A. Bruce, Hybrid	3 00
Second, Mrs. J. L. Gardner, Telegraph	2 00

WATERMELONS.—Two specimens:

First, E. L. Lewis	3 00
Second, J. F. Jones	2 00
Third, Joseph Thorpe	1 00

BRUSSELS SPROUTS.—Half-peck:

First, Mrs. J. L. Gardner	3 00
Second, A. E. Hartshorn	2 00

CABBAGES.—Three Drumhead, trimmed:

First, E. L. Lewis	3 00
Second, E. L. Lewis	2 00
Third, A. E. Hartshorn	1 00

Red:

First, H. E. Rich	3 00
Second, E. L. Lewis	2 00
Third, E. L. Lewis	1 00

Savoy:

First, J. C. Stone	3 00
Second, W. Warburton	2 00
Third, E. L. Lewis	1 00

CAULIFLOWERS.—Four specimens:

First, DeSouza Brothers	5 00
Second, C. M. Handley	4 00
Third, H. E. Rich	3 00

CELERY.—Four roots of Paris Golden, best kept during the exhibition:

First, J. C. Stone	5 00
Second, A. E. Hartshorn	4 00
Third, A. F. Coolidge	3 00

Any other variety:

First, W. Heustis & Son, Pascal	5 00
Second, A. E. Hartshorn, Boston Market	4 00
Third, W. Warburton, White Plume	3 00

ENDIVE.—Four specimens:

First, A. Nixon	3 00
Second, A. E. Hartshorn	2 00
Third, E. L. Lewis	1 00

LETTUCE.—Four heads:

First, Varnum Frost, Big Boston	3 00
Second, George D. Moore, Tennisball	2 00
Third, J. C. Stone, "	1 00

PARSLEY.—Two quarts:

First, W. J. Clemson, Matchless	2 00
Second, W. J. Clemson, Champion	1 00

HORSERADISH.—Six roots, present year's growth:

First, H. R. Kinney	2 00

CORN.—Yellow or Field, twenty-five ears, traced:

First, B. P. Winch	3 00
Second, Elliott Moore	2 00
Third, L. C. Linscott	1 00

Sweet, twelve ears:

First, H. R. King	3 00
Second, Charles Scully	2 00
Third, H. W. Anderson	1 00

TOMATOES.—Twelve Aristocrat:

First, W. Warburton	3 00

May's Favorite:

First, Hon. Aaron Low	3 00
Second, W. Heustis & Son	2 00

Stone:

First, Hon. Aaron Low	3 00
Second, Joseph Thorpe	2 00

Any other variety:

First, Hon. Aaron Low, Enormous	3 00
Second, Hon. Aaron Low, Combination	2 00

PEPPERS.—Twelve specimens of Squash:

First, Hon. Aaron Low	3 00
Second, A. Nixon	2 00

Any other variety:

First, Hon. Aaron Low, Bull Nose	3 00
Second, Hon. Aaron Low, Ruby King	2 00
Third, Joseph Thorpe, Giant	1 00

CULINARY HERBS, GREEN.—Collection, named:

First, W. J. Clemson	5 00
Second, W. Warburton	4 00

NOVEMBER 10.

PARSNIPS.—Twelve specimens:

First, Varnum Frost	3 00
Second, A. E. Hartshorn	2 00
Third, H. R. King	1 00

SALSIFY.—Twelve specimens:

First, Varnum Frost	3 00
Second, H. R. King	2 00

CUCUMBERS.—Pair:

First, E. L. Dorr	3 00
Second, E. L. Dorr	2 00
Third, Mrs. J. L. Gardner	1 00

CABBAGES.—Three Red, trimmed:

First, A. E. Hartshorn	3 00
Second, H. E. Rich	2 00

Savoy:
First, A. E. Hartshorn 3 00
Brussels Sprouts — Half-peck:
First, A. E. Hartshorn 3 00
Second, A. E. Hartshorn 2 00
Third, C. W. Parker 1 00
Cauliflower — Four specimens
First, C. M. Hadley 3 00
Second, W. H. Teece 2 00
Third, Dexter Brothers 1 00
Celery — Four roots
First, Joseph Tapley 3 00
Second, W. Brooks & Son 2 00
Third, A. F. [illegible] 1 00
Lettuce — Four heads
First, Warren Fiske 1 00
Second, A. E. Hartshorn 2 00
Tomatoes — Two specimens, grown under glass
First, W. C. Winter, Cambridge 3 00
Second, W. C. Winter, Stow 2 00
Third, F. L. Dorr, Essex 1 00

Vegetables —
[illegible] 1 00
[illegible] 2 00
[illegible] 11 00
[illegible] 5 00
[illegible] 3 00
[illegible] 5 00
[illegible] 5 00
[illegible] 3 00
[illegible] 5 00
[illegible] 5 00

Warren H. Wait, Boston,
Charles H. [illegible],
Warren Fiske,
Walter Brooks,
Asa N. [illegible],
[illegible] Norris,
[illegible] Sons,
Committee on Vegetables.

Savoy:	
First, A. E. Hartshorn	3 00
BRUSSELS SPROUTS.—Half-peck:	
First, A. E. Hartshorn	3 00
Second, A. E. Hartshorn	2 00
Third, C. W. Parker	1 00
CAULIFLOWER.—Four specimens:	
First, C. M. Handley	3 00
Second, W. H. Teele	2 00
Third, DeSouza Brothers	1 00
CELERY.—Four roots:	
First, Joseph Thorpe	3 00
Second, W. Heustis & Son	2 00
Third, A. F. Coolidge	1 00
LETTUCE.—Four heads:	
First, Varnum Frost	3 00
Second, A. E. Hartshorn	2 00
TOMATOES.—Twelve specimens, grown under glass:	
First, W. C. Winter, Combination	3 00
Second, W. C. Winter, Stone	2 00
Third, E. L. Dorr, Essex	1 00
Gratuities:—	
N. W. T. Knott, Gourds	1 00
C. W. Parker, Display	2 00
E. L. Lewis, Collection	10 00
W. J. Clemson, "	5 00
A. F. Coolidge, "	5 00
W. Heustis & Son, "	5 00
Hon. Aaron Low, "	5 00
George D. Moore, "	3 00
A. Nixon, "	5 00
W. Warburton, "	5 00

WARREN HOWARD HEUSTIS,
CEPHAS H. BRACKETT,
VARNUM FROST,
WALTER RUSSELL,
AARON LOW,
GEORGE D. MOORE,
JOSHUA C. STONE,

Committee on Vegetables.

The Gov. Oliver. Ames Estate at North Easton.

REPORT

OF THE

COMMITTEE ON GARDENS

FOR THE YEAR 1901.

By PATRICK NORTON, CHAIRMAN.

Your Committee has been very active during the year just closing, and has visited a large number of places, and the knowledge thus gained of the different methods employed in the cultivation of plants will be useful not only to the Committee, but to all who read this report. We will take the places visited in rotation, and describe in as brief a manner as possible the later or newer methods adopted to bring about the success each grower aims to accomplish.

W. W. RAWSON'S LETTUCE HOUSE, ARLINGTON.

The first place visited (February 21, 1901) was that of W. W. Rawson at Arlington, who has thirty-five large greenhouses and two thousand sashes of hotbeds, mostly devoted to the growing of lettuce, radishes and cucumbers for the market. Here we saw for the first time the process of sterilizing the soil in which the plants were grown. This process is no doubt a great benefit, as the immense steam heat which permeates every portion of the soil kills all germs of fungi deleterious to plants and all seeds of weeds as well, thus leaving the soil in splendid condition for a year's cultivation. This process is to be commended.

Lettuce plants were in all stages of development, from the planted seeds just appearing above ground to the large perfect heads ready for market. The house we were asked to scrutinize

was four hundred feet long and fifty feet wide and contained thirty-seven thousand plants averaging over one foot in diameter, a remarkable showing of splendid plants. Another house containing cucumbers was very fine, and the plants very vigorous and heavily set with fruit.

Peter Fisher's Carnation House, Ellis.

The second place visited (March 14, 1901) was that of Peter Fisher, at Ellis. His specialty is the growing of carnations. He had several houses of these plants, and in some of them he was testing the qualities of the best plants sent out by different growers, and also, to a greater extent, testing numerous seedlings of his own production. He is a very enthusiastic cultivator of carnations and has put upon the market the best one yet produced in America; wherever it has been exhibited it has taken first prize over all others, and when we saw it growing on the benches we ceased to wonder at its success. The house entered was three hundred and two feet long by twenty-three feet wide and presented the finest appearance of any house of carnations your Committee ever saw. The flowers and buds were more numerous and the expanded flowers were larger and of more perfect shape and color than any we ever saw before. There were no expanded flowers in the house that would measure less than three inches in diameter, and from that up to four inches, with upright stems holding the flowers in a presentable condition.

Mr. Fisher submits a description of his principal house for growing carnations, as follows:

House of modern construction, three hundred and two feet long, twenty-three feet wide, and twelve feet high to ridge running north and south. Continuous ventilators each two feet wide, on both sides of ridge. Benches five feet wide, lengthwise of house, with a walk eighteen inches wide next to walls. Benches rest on three-quarter inch iron pipe. Woodwork, cypress. Glass, 16 x 24. Cement walls, in which are set one and one-half inch iron posts to sustain the structure.

Compost consists of sods from old pasture, well rotted, with a liberal addition of ground bone, lime and stable manure in about equal quantities. The plants were transferred from the open

Peter Fisher's Carnation House at Ellis. The Mrs. Thomas W. Lawson Carnation.

Nau

ground to the benches about the middle of August, and the first stimulant was given late in November, in the form of a light top dressing composed of half soil, and half pulverized sheep manure and bone meal. Air-slaked lime was freely applied when the soil showed signs of becoming sour.

The temperature was 52° to 55° during the night, with a rise of 15° to 20° during the day.

The principal crop consisted of:

3,000	plants	Mrs. Thomas W. Lawson,
1,000	"	Maine,
1,000	"	Eastern Star,
500	"	The Marquis,
500	"	Mrs. George M. Bradt.

Steam was used for heating the house with four one and one-quarter inch pipes on each side and one one and one-quarter inch pipe under each bench.

Mr. Fisher entered for the best House of Carnations.

Mrs. David Nevins's Estate, Methuen.

The next visit which occurred on June 20th, was to the beautiful old estate of Mrs. David Nevins, at Methuen. This estate, occupied by the ancestors of Mrs. Nevins in the eighteenth century, was now undergoing extensive repairs and improvements, but the admirable features of the old mansion were being preserved. The shrubbery, which forms one of the great charms of the place, was in splendid condition, owing principally to the unremitting vigilance of the owner. The place is surrounded by noble elms interspersed with clumps of fine shrubbery, and the Spicket River, flowing through velvety green banks on one side of this estate, makes it a very attractive homestead, while the view from the summerhouse over an expanse of meadow and far away, gives a charm of restful pleasure to the place not exceeded anywhere.

Warren H. Heustis's Strawberry Garden, Belmont.

On June 26th the Garden Committee visited the fruit and vegetable farm of Warren H. Heustis, at Belmont, to inspect his strawberry garden and to pass upon the quality of the fruit. It

would appear that Mr. Heustis cannot any further improve upon the size or quality of strawberries, for those we saw and tested were as near perfection as they can be grown in this part of the country; expert growers from other towns were of the same opinion as your Committee. The kinds mostly cultivated were the Marshall and Belmont. The latter originated on this farm, and still retains the good keeping qualities, large size and fine flavor it had when first shown. We congratulate Mr. Heustis on knowing how to grow good strawberries.

GEORGE D. MOORE'S CUCUMBER HOUSE, ARLINGTON.

On June 27th we visited Arlington to inspect a house of cucumbers as grown by George D. Moore & Son. The house was two hundred and forty feet long by thirty-five feet wide, and contained about six hundred plants well set with fruit and in vigorous health. From the good condition of this house we infer that these people have not forgotten how well their house looked two years ago, and, taking that as their standard of excellence, have this year fully equaled their pattern. The vegetable garden was of the usual type of the market gardener, and showed good cultivation and a very thrifty appearance. We append Mr. Moore's letter giving his method of growing crops.

PATRICK NORTON, *Chairman Committee on Gardens*;

DEAR SIR: — Complying with your request to make a statement concerning methods pursued in reaching the high state of cultivation in which you found my farm or market garden when visiting me last summer, let me say to start with that this subject has been so frequently and ably treated by those better qualified than myself to write upon it, that I hesitate to attempt to make you a statement fearing that I shall fail to do either myself or the subject justice. But as you have awarded me the first premium it is but just that you should demand of me some explanation of the methods pursued. So I will briefly tell my story.

To begin with I am largely indebted to a generous water supply. In the fall of 1900 I secured the services of Morton & Waugh of Boston to provide me a water supply that would furnish enough, not only for my four large greenhouses and one thousand hotbed sashes, but for ample outside irrigation in my seventeen acre garden; to say they fully succeeded hardly does them justice for of the four two and one-half inch wells put down

The Gov. Oliver Ames Estate at North Easton.

(one struck a rock and was abandoned), three at the depth of fifty to sixty feet furnished a bounteous supply of the purest and best of water. A Dean steam pump of four inch suction, throwing nearly two hundred gallons per minute night and day enabled us to water thoroughly both the crops and the land before planting; also to wet down the fresh strawy horse manure as brought from city stables forcing the rotting, and aiding its preparation for the soil.

On much of my land I raise two or three crops, sowing early spinach and as soon as the ground is in condition to cultivate there follows a crop of beets with every fifth row left for celery; or, I plant the early beets for a first crop, carefully preparing the soil by plowing and harrowing, then a fair dressing of stable manure is lightly plowed in and well rotted if possible, supplementing the manure by one-half a ton to the acre of some reliable phosphate (we have found nothing better than Bowker's or Stockbridge Specials). I rake this in thoroughly after the last plowing. This is practically my method with all crops except tomatoes, parsnips, carrots etc.; these crops do not need fertilizing so liberally. If at any time you wish me to give you a statement of my management of hotbeds, or a more minute explanation of my treatment of any special outside crop, please command me.

GEORGE D. MOORE,
M. ERNEST MOORE, *Proprietor and Manager.*

ESTATE OF H. H. ROGERS, FAIRHAVEN.

The sixth place visited was that of H. H. Rogers, at Fairhaven. This estate is entered in competition for the H. H. Hunnewell Triennial Premium, and this was the Committee's first visit. It consists of eight acres of reclaimed land on the borders of the sea which separates Fairhaven and New Bedford. The situation is very much exposed to the winds from the ocean, but the caretaker, Mr. James Garthley, has so judiciously laid out the grounds and carefully planted the trees, shrubs and flowers as to make it a beautiful home for the owner.

THE OLIVER AMES ESTATE.

On August 13th the Committee was called to view the Oliver Ames estate, at North Easton. This estate is entered for the H. H. Hunnewell Triennial Premium, by Mr. Oakes Ames, son of the late Governor, and this is the third year of inspection. The

whole estate was in very fine condition. The grand old trees, which were planted by the late Governor of this Commonwealth, were in better condition than ever before, and their appearance indicated that they were receiving the kind care essential to good healthy growth. The lily ponds were resplendent with blooms of all sorts of aquatics from the four quarters of the globe, and presented a grand appearance. This estate shows not only the constant change going on in the vegetable products that are being gathered from all parts of the world for scientific and ornamental purposes but accessions are continually being made by importations and Mr. Ames's own hybridizations, thus making the place actually a botanic museum of living plants.

Estate of C. H. Tenney, Methuen.

On September 27th we visited "Greycourt," the regal estate of C. H. Tenney, at Methuen. This estate was entered for the H. H. Hunnewell Triennial Premium, and this is the second year of entry. The last year's Transactions, Part II, contains a photograph of this estate which appeals to the eye better than any language can portray its beauties. Mr. Tenney is constantly improving his ground by judiciously cutting out trees and shrubs where they have grown so large as to interfere with each other, thus giving the more valulable one room to expand and also a longer lease of life. He is also constructing on the north side of the hill on which the house stands a splendid bowling green, the first in New England, with all the accessories to make the sport of bowling on the turf a pleasant and agreeable exercise and a joy forever to those who believe in athletic sports.

W. P. Lothrop's Dahlia Garden, East Bridgewater.

The next visit, which occurred on September 30th, was to the dahlia farm of W. P. Lothrop, East Bridgewater. This farm consists of four acres and was planted with about four hundred varieties of dahlias — growing from twenty thousand hills. New varieties of special merit are constantly being added and sixty new kinds were acquired this year. They are of every conceivable description, but it seems that the variety described as the

The Chrysanthemum House of Hon. E. S. Converse, Malden.

Cactus dahlia is the most sought for. Mr. Lothrop planted a bed of four hundred plants at the Paris Exposition last year and received for the display a medal. The roots will be stored during the winter, packed in dry sand.

Waban Rose Conservatories, Natick.

On Monday, November 4th, the Committee visited the extensive Waban Rose Conservatories at Natick. The whole plant is under the care of Alexander Montgomery, and when we say this and have seen the contents of the houses, we know that Mr. Montgomery understands how to grow roses. The rose bushes were perfectly free from insects and mildew and presented the finest show of buds and flowers conceivable. Only a few kinds were grown, and those were the ones most sought for by dealers; they consisted of The Bride, Bridesmaid, American Beauty, Morgan, Liberty, Madame de Watteville and Helen Gould. Some of the houses contained sixty-five hundred plants, and when we looked over the beds of luxurious bloom seven hundred feet in length we began to wonder where all the roses go to, but these were so well grown and splendidly finished that there was no difficulty in disposing of all at remunerative prices. The Proprietors contemplate building another house seven hundred and fifty-two feet long by fifty-two feet wide, in the near future, so as to enable them to grow a few more roses.

Estate of Colonel Charles Pfaff, South Framingham.

The next visit was to the elegant estate of Colonel Charles Pfaff, South Framingham, on November 4th, to inspect a house of chrysanthemums grown on benches. Six hundred and fifty plants comprising seventy varieties, with one flower on each plant were a beautiful sight, and the gardener, Mr. George Melvin, was complimented by the Committee for his efficiency in producing such fine blooms.

Estate of E. S. Converse, Malden.

On November 5th the Committee visited the estate of The Hon. E. S. Converse, at Malden, to inspect his two chrysanthemum

houses in which the plants are grown in pots and arranged with other plants for effect. This plan makes the houses look beautiful, and the gardener, Mr. D. F. Roy, has certainly accomplished the object striven for. The chrysanthemums were arranged on each side of the path lengthwise of the houses, with handsome foliage plants intermixed. The standard chrysanthemum plants were placed at stated intervals, which added very materially to the beauty of the houses.

Mrs. A. W. Spencer's Chrysanthemum House, South Framingham.

On November 6th the Committee was called to inspect a house of chrysanthemums grown on benches by Alexander McKay, gardener to Mrs. A. W. Spencer, of South Framingham. There were in this house four hundred plants in sixty-two varieties, grown to one flower each. The flowers were splendidly grown, of very large size and well finished.

Estate of Frederick Parker, Bedford.

On the 13th of November the Committee visited the Shawsheen River Farm of Frederick Parker, at Bedford, to inspect crops of cucumbers, tomatoes and lettuce. There were three houses, three hundred feet long by thirty-six feet wide, each of which would contain nineteen thousand four hundred and forty-eight plants of lettuce. One of these houses was used for propagating seeds of all kinds till late in the spring, when it was planted to cucumbers. Two other houses, three hundred and fifty feet long by thirty-six feet wide, each contained twenty-two thousand four hundred and forty lettuce plants nearly ready for the market. Another house of lettuce was three hundred and thirty feet long and thirty-six feet wide and contained twenty-one thousand, seven hundred and thirty-six lettuce plants. In another house were growing three hundred and eighty hills of cucumbers, set two and one-half feet apart; these were not a great success, although a fair crop had matured and was being harvested.

The tomato house was one hundred and forty-six feet long by thirty-six feet wide, and contained five hundred and sixty-eight

plants in the most flourishing state of any tomato house we ever saw. The seed was sown on the 8th of July, and when the plants were large enough to handle they were potted into small pots; as the plants grew and filled the pots with roots, they were "potted on" till the first fruit was set, then transferred to the fruiting beds in the house, which were sixteen inches deep and very rich. Here they were trained to one stem and showed more fruit than any house we ever saw. The first picking began in early November. The variety was Henderson's Freedom. Our attention was called to a small house twenty-five feet long by twenty feet wide, which was full of tomato vines and had been planted nearly one year and was now showing a fair crop of fruit. The soil used in these houses was thoroughly sterilized and the rotation generally followed was three crops of lettuce and a crop of cucumbers. The whole plant was in fine condition and reflected very much credit on Mr. C. A. Learned, the manager.

R. & J. Farquhar's House of Begonia Gloire de Lorraine, Mount Hope.

The last place visited was at Mount Hope. The greenhouses belong to R. & J. Farquhar & Co. and William Donald is manager. The object of our visit was to inspect a house of begonias of the Gloire de Lorraine type. This house contained more than ten thousand plants of all sizes, and presented a grand appearance. There were the original pink, the newer white Caledonia, and the Compacta, a new variety originated here. These plants were grown at as cool a temperature as possible, so that they would withstand being transferred to dwelling houses. They make very handsome house plants for they are always in bloom. The Committee did not confine themselves to admiring the begonias, but strolled over the different houses and got some ideas of what Mr. Donald was trying to accomplish. His palm house was very fine and contained palms of all ages and sizes. Probably the most useful work Mr. Donald is doing is the propagating of a new rose originated by Jackson T. Dawson. This rose is a cross between the Wichuraiana and the Crimson Rambler, both of which are runners, but this new Farquhar rose will excel them

both in this respect. During the past four months over a thousand plants have been propagated, but they will not be put on the market till a large stock is accumulated. This rose is getting a splendid reputation from eminent gardeners who have seen it in bloom.

The Farquhars are preparing to erect more glass houses early in the spring, to accommodate their ever increasing business.

The Prizes and Gratuities awarded this year, are as follows:

H. H. Hunnewell Triennial Premium.

For an estate of not less than three acres, which shall be laid out with the most taste, planted most judiciously, and kept in the best order for three consecutive years,	
First, The Oliver Ames Estate	$160 00

Special Prizes from the John A. Lowell Fund.

For the best house of Chrysanthemums grown on benches:	
First, Mrs. A. W. Spencer	30 00
Second, Col. Charles Pfaff	20 00
For the best House of Chrysanthemums with other plants arranged for effect, in pots:	
First, E. S. Converse	30 00
Second, E. S. Converse	20 00

Society's Prizes.

For the best House of Carnations:	
First, Peter Fisher	30 00
For the best House of Roses:	
First, Waban Rose Conservatories, American Beauties	30 00
Second, Waban Rose Conservatories, Assorted Teas	20 00
For the best Vegetable Garden:	
First, George D. Moore & Son	30 00
For the best House of Lettuce:	
First, W. W. Rawson	30 00
Second, Frederick Parker	20 00
For the best House of Cucumbers:	
First, George D. Moore & Son	30 00
For the best Strawberry Garden:	
First, Warren H. Heustis	30 00

The Gov. Oliver Ames Estate at North Easton.

Gratuities.

Mrs. David Nevins, Estate	25 00
W. P. Lothrop, Dahlia Garden	20 00
R. & J. Farquhar & Co., House of Begonia Gloire de Lorraine	25 00
Frederick Parker, House of Tomatoes	25 00
C. A. Learned, Superior Cultivation of Tomatoes under glass	Silver Medal

Respectfully submitted,

PATRICK NORTON,
ARTHUR H. FEWKES,
J. WOODWARD MANNING,
E. W. WOOD,
WARREN H. HEUSTIS,
J. H. WOODFORD,
JACKSON T. DAWSON,
HENRY W. WILSON,

Committee on Gardens.

REPORT

OF THE

Committee on School Gardens and Children's Herbariums

FOR THE YEAR 1901.

By HENRY LINCOLN CLAPP, CHAIRMAN.

Even a brief consideration of the work for which this Committee stands will take us not only out of Massachusetts but out of New England as far as the Central States where we may find an extraordinary example of what may be done in training boys to habits of industry, teaching them to respect the rights of others, and making them instrumental in improving their neighborhood on a vast scale.

BOYS' GARDENS IN DAYTON, OHIO.

The boys' gardens established by the National Cash Register Company deserve a more extended notice than can be given in this report. There were forty gardens last year, but the increased demand necessitated seventy-four plots this year, each ten by one hundred and thirty feet in size, two and one-fifth acres in all. The cost of the land and the cultivation of it one year was $3500. The boys average about twelve years of age, and complete the course in gardening in two years, when each receives a certificate to the effect "that ——— has been instructed in the National Cash Register Company's Garden Work, and has been faithful and proficient in the same."

The certificates are signed by Mr. J. W. Patterson, the president of the Company. His own two children, Frederick and

Dorothy, as well as his nephew and niece, are also proficient in gardening, showing that what he believes to be good for other children he thinks is just as good for his own. He thinks it is possible for boys to go to school too long and so become bookish and out of touch with the active business world; and he rates his experience on the farm more valuable than anything he ever learned at school, valuable as the latter undoubtedly was.

The result of this garden work has been most extraordinary. Slidertown was one of the worst parts of the city; now it is one of the very best, and its change of name to South Park is indicative of the change wrought in every condition. Three of the worst boys were gotten rid of, and "the rest were formed into clubs and brigades, and were given gardens and taught to respect themselves and the rights of others." Then land rose from $300 a lot to three times that amount; and the $3500 put into the garden work carried on by the boys is said to be the best investment for the money that the Company ever made.

In spite of the strike among the ungrateful employees of the Company and the long droughts a great amount of garden stuff was raised; namely, 814 dozen onions, 1332 dozen radishes, 962 dozen beets, 1258 dozen carrots, 481 dozen ears of sweet corn, 9 bushels of seed onions, 56 bushels of peas, 74 bushels of wax beans, 62 bushels of butter beans, 79 bushels of potatoes, 111 bushels of tomatoes, 9 bushels of sweet potatoes and 2590 heads of cabbage.

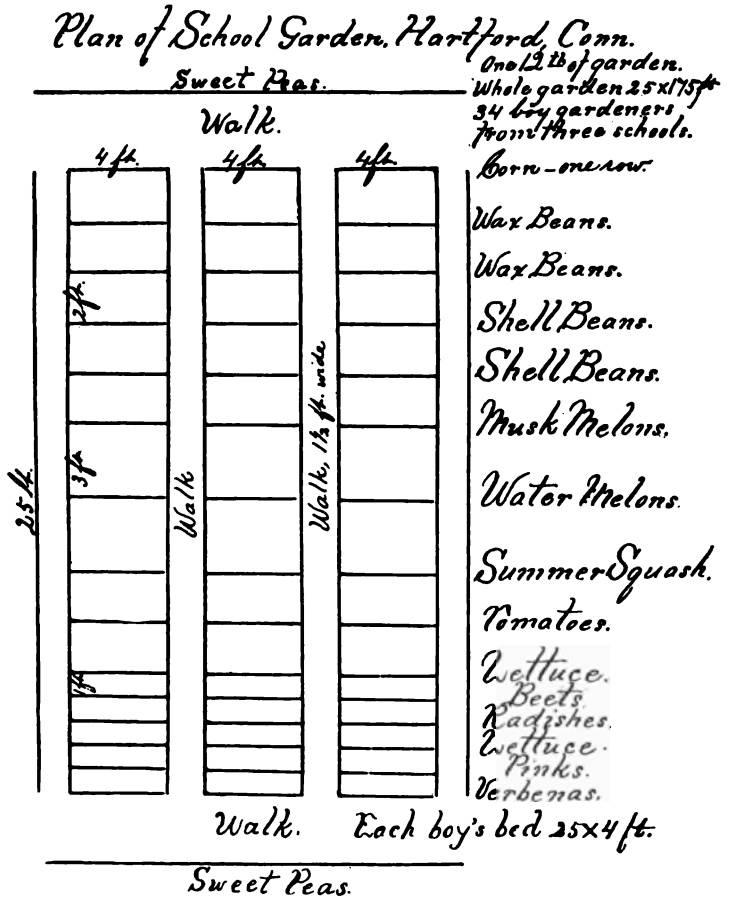
The land, tools, seeds and instructor were furnished by the Company. Most of the boys supplied their families with vegetables during the summer, and many earned enough money by the sale of vegetables not needed at home to pay for their school books.

The boys were given a supper, ten money prizes amounting to $35, five prizes each in the form of the Youth's Companion for a year, bronze medals and a stereopticon lecture by the president, Mr. Patterson.

Such an example is most worthy of imitation by other companies and associations having in view the uplifting and proper training of boys.

SCHOOL GARDENS, SCHOOL OF HORTICULTURE, HARTFORD, CONN.

The principals of three public schools selected ten boys apiece to work the beds prepared for them. The boys were furnished with tools, seeds, plants to set out, four-foot measuring sticks, twelve inch labels for the beds, note-books, pencils, etc. The number on the bed label corresponded with that on the note-book. In the note-book each boy drew a plan of his plot, wrote out the



directions he received as to how his seeds should be planted and his plants cared for, and kept his attendance.

If a boy was absent twice in succession without excuse he ran the risk of losing his garden, as there were always plenty of boys on the waiting list ready to take forfeited gardens. Sixty-five per cent of the gardens did not change hands. Three of the beds changed three times apiece. Six of the delinquents said it was too far; two got tired; and two were delinquent even on excuses. Several boys had to come two or three miles, and a few of these never missed a lesson. Some of them stuck to their work although on three occasions it rained at intervals of a few minutes — and besides it was on Saturday when they worked. That showed commendable zeal.

The whole cost of the garden work (not including instruction and rent of land) was $47.33. The Civic Club voted to appropriate $25 in prizes for the following products: $1.00 each for the three best gardens, three best books, best ear of corn, vine of shell beans, vine of wax beans, beets, tomatoes, summer squash, watermelons and musk melons, bunch of verbenas, bunch of radishes and best essay of one hundred words on garden work, with second prizes for some of the things.

The judging was done by two prominent and competent men, Mr. George A. Parker, Superintendent of Keney Park, and Mr. Theodore Wirth, Superintendent of City Parks.

The nineteen boys who won prizes made an exhibit of the vegetables they had raised; and with the eatables to look at, the speeches to listen to, and the prizes to carry off, the occasion was an enjoyable one for the boys.

As a result of the summer's work the Committee says: "One of the churches here in the city has already cleared up an unsightly back yard, put up a new fence, plowed the ground, and proposes to have a class of the older Sunday School boys work in the garden thus formed and grow flowers for the use of the church and the sick.

"If the boy's time thus taken kept him usefully employed when he might otherwise have been running the streets or sowing the seeds of future crime, if he received lessons in industry, if he has

learned things that will be of use to him later in life, if his health has been improved by being in the open air, if a love of things beautiful and a desire to search the mysteries of nature have been awakened within him; if he is better able to see what he looks at and understand what he sees, he will be broader in view and a better citizen, and his work in the allotment garden will not have been in vain."

SCHOOL GARDEN, BATH, MAINE.

MR. HENRY L. CLAPP,

DEAR SIR: The generosity of your Committee enabled me to add to our school garden the following plants:

Adiantum pedatum,
Aspidium Filix-mas,
Asplenium platyneuron,
Aquilegia oxysepala,
Aster alpinus,
" *Chapmani*,
" *lævis*,
" *Sibiricus*,
Cypripedium pubescens,
" *spectabile*,
Onoclea Struthiopteris,
Sanguinaria Canadensis,
Spiræa lobata,
Viola Alpestris,
" *pubescens*,
" *rostrata*.

The garden has been used by the botany class more this year than in any previous years. The pupils made a careful study of the plants as they appeared. They recorded the growth from day to day and made many good drawings of the plants in their various stages. Much interest was shown in the ferns, of which there are at present twenty species.

Very truly yours,

VIOLA G. HOGAN.

SCHOOL GARDEN OF THE TWENTIETH CENTURY CLUB, BOSTON.

Last spring (1901) a school garden containing eighty-two beds was established in the yard of the English High School on Dartmouth Street, Boston. It has been given the above title because two lady members of the Club were foremost in establishing it and

the Club paid the expenses of it,—$50 to the gardener, $25 to the young lady who instructed the pupils during the summer vacation, and $17 for preparing the ground, laying out the beds for planting and miscellaneous expenses—$92 in all. Some tools and seeds were given by Joseph Breck & Sons.

Boys from the Rice School and girls from the Franklin School in about equal numbers, enjoyed the privilege of raising vegetables and flowers in this garden. The girls of the Normal School received instruction in garden work last summer in this garden instead of instruction in geology which they have had in previous years. So those who are preparing to teach will be equipped with the theory and practice of raising vegetables and flowers. That is an excellent beginning in the right place and in the right way. It must be borne in mind that there is behind this enterprise a club with money and meaning business. Thirteen dollars' worth of photographs of the garden is one indication of an intention to do a good thing even if it does cost a little money. The Club will bear the expenses of the garden another year, at least.

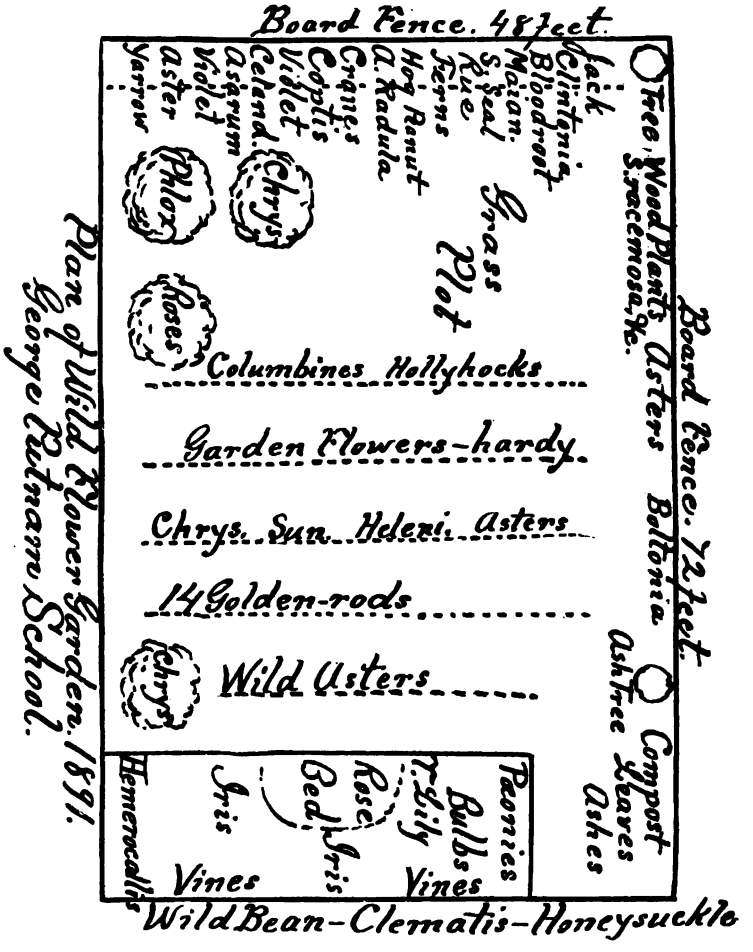
THE GEORGE PUTNAM SCHOOL GARDEN, BOSTON.

The second season of the kitchen garden on the grounds of the George Putnam School closed about November 1, 1901, when the pupils finished planting their bulbs for spring blooming. Here is a garden with more beds (eighty-four) than any other garden yet mentioned, which was laid out without expense to any one outside of the school, as a friend ploughed it free of charge and the children made all the beds out of the rough field of sods. They bore the expense of tools and seeds and did all the work. There were no special inducements to ensure faithful work—I wish there might have been—nevertheless, some of the pupils came regularly every week on Monday afternoon without any adult to meet and instruct them, and did not allow a single weed to be seen in their beds. They watered their plants when necessary, carried home lettuce, radishes, corn, kohl-rabi, beets, and other vegetable roots and flowers, and had their beds looking "spick and span" when the school opened in September. They just loved to do it. One

girl wrote in her composition that she preferred gardening to anything she studied in school; and yet she was a good scholar.

There were many delinquents. No doubt some were constitutionally weary; some decided that a vacation was a very improper time to double up one's back like an inch-worm in order to pull weeds; some of them could run like hares on the "gridiron" and drip with sweat without thinking of it. But when school opened, delinquents and all took hold and eradicated all the weeds, perambulated with the water pots, straightened the beds and paths,

squinted with one eye half open, and put their wits to work generally. In a short time the existence of weeds during the summer would never have been suspected by the casual observer.



During October there was a fine display of hardy chrysanthemums, some red and some yellow, and sneezeweeds (*Helenium autumnale*) which had been planted by the hundreds in the pre-

ceding spring. Generally each pupil had a red chrysanthemum in one end of his bed, and a yellow one in the other, and a sneezeweed in the middle. Since all blossomed profusely the garden was glorious with color.

As usual the material in the wild flower garden, which was begun in 1890, (see plan on opposite page), has been used in school in nature study and designing. A number of lantern

Pupil's Surface Design from Columbine, George P. tnam School.

slides of designs based on the sneezeweed have been made. Many photographs of the pupils engaged in garden work have been taken, and half-tone prints from them are expected to appear as illustrations of an article on "A Boston School's Kitchen Garden" in the June number of the New England Magazine.

It may be mentioned in this connection that one hundred reprints of the article will be sent and given to persons interested in following out the work of this Society. Just a year prior to

the appearance of the article just mentioned, or in May, 1901, the Chairman of the School Garden Committee wrote a sixteen page article on school gardens for the monthly magazine "Education" and had two hundred reprints struck off for distribution in preference to receiving cash for remuneration. The work is meritori-

Composite Flowers in Wild Flower Garden, George Putnam School.]

ous enough to warrant the expenditure of time and skill in writing, photographing, lantern-slide making and actual currency of the nation.

INTEREST IN SCHOOL GARDENS INCREASING.

Immediately following the last Herbarium Exhibition this appeared in the editorial columns of the Transcript: "It does not seem that any statement should be necessary to show the ad-

vantages of school gardens. Besides training habits of observation, garden work keeps children off the streets, cultivates habits of industry and respect for other people's gardens, gives the children a love of nature and turns their attention toward the blessings of out-door life as an offset to the strong current toward the life of the shops and the tenements. Window gardens in the home follow school gardens, and bring added sweetness to life. If the masters of the Boston schools would make more effort in this direction and were better supported by a Board of Education working in sympathy with the Massachusetts Horticultural Society, the children of the public schools would learn something that would be of quite as much value as much that they learn from books, and the city and the Commonwealth would be the gainers."

Interest in school gardens is increasing. Educators are beginning to appreciate the educational value of raising plants. The Educational League has published a leaflet on a German school garden. George Henry Knight of New York, wrote an article on the subject which came out in Pearson's Magazine last year; and he wrote me that he is going to publish another, and I have sent him some photographs to illustrate it. Dr. F. M. Powell, Superintendent of the Institution for Feeble-Minded Children in Glenwood, Iowa, is also writing a monograph on the subject, and I sent him four of the half-tone cuts that illustrated the report of our Committee last year. A number of women teachers, to my knowledge, are going to talk on the subject before clubs in Boston and vicinity. I had the pleasure of showing about sixty lantern slides of children at work in the school garden before the Boston Society of Natural History, December 18, 1901. In view of such indications as these there is no doubt that the subject is increasing in popular estimation.

CHILDREN'S HERBARIUMS.

Since there was considerable uncertainty as to whether the hall in this building would be ready for exhibition the Committee made less effort than usual to secure a large exhibit of herbariums; but they came just the same in unexpected numbers. Additional sat-

isfaction was found in the attendance of an unusual number of children, a fact that could not be accounted for at first thought. Then came the idea that the hall was situated in a residential district, and all was plain. This promises well, not only for herbarium exhibitions but for all other kinds of exhibitions.

The exhibitors came in families, so to speak, more than in any previous year. There were three Murdoch boys, three Morss boys, two Swain boys, two French girls and two Clapp girls. For years past it has been noticed that the family interest in herbarium work has been much greater than any school interest; and so slight has the latter been that the Committee have decided to give up that part of their work and turn their attention to the encouragement of family interests. There seem to be dead weights on the schools so far as anything besides books is concerned. There are two probable reasons for this condition. Teachers generally are not yet sufficiently acquainted with wild flowers to have enough interest in herbarium work to induce their pupils to make herbariums. The past ten years' experience shows that individual parents have much more interest and efficiency in bringing about results in herbarium work than teachers. Secondly, the requirements of the course of study, are so exacting as to leave neither place nor time for collecting, pressing and mounting plants. So the case seems to be a hopeless one for public school children.

The most notable collection was that sent in by Dorothea Metcalf. The beauty of the arrangement of the plants and the preservation of their colors were far beyond anything else in the hall. Her parents were found to be enthusiastic in the work. And this attitude of the parents has been found to be so uniform through years that the Committee have come to rely upon it as a permanent thing, and to base all their hopes upon it.

Olive French's collection of fifty grasses and Christine Dudley Clapp's collection of leaf sprays were easily the best of their kind on exhibition. The mothers of these girls are deeply interested in their work. Olive's brother, Arthur, who exhibited so many years, is a skillful botanist, although still in his teens. And the little Marion French is coming along the same line.

The opportunity thus presented to children by the Massachusetts

Horticultural Society is certainly a great one. The Committee hold it in higher and higher esteem as the years go on; and the children and their parents seem to be of the same mind.

The Committee have decided to make one radical change in their awards for herbariums; that is, to pay a definite sum for every specimen that comes up to the standard. This simplifies the work very much, and allows exhibitors to make additions many years without requiring the Committee to attempt the difficult task of determining a just award in view of all the plants that the exhibitor may have entered in previous years. Inducements for entering lichens and mosses have been made by offering a definite sum as indicated in the circular.

PRIZES AND GRATUITIES AWARDED FOR SCHOOL GARDENS AND CHILDREN'S HERBARIUMS.

SCHOOL GARDENS.

George Putnam School, Roxbury, first prize	$15 00
Gratuity:—	
High School, Bath, Me.	5 00

CHILDREN'S HERBARIUMS, NOVEMBER 30, 1901.

FLOWERING PLANTS.—For one hundred specimens:

First prize, Dorothea Metcalf	$4 00
For twenty-five specimens:	
First prize, Donald N. Swain	1 50
Gratuities:—	
John Murdoch, Jr., eighty additions to four hundred and fifty	4 00
Joseph Murdoch, ninety-one additions to one hundred and sixty-seven	3 50
Richard Murdoch, ninety-four additions to one hundred and ten	3 00
Olive L. French, thirty-seven additions to two hundred and ninety-six	2 50
Marion L. French, seventy-six additions to sixty-six	2 00
Roscoe G. Knight, one hundred and three additions to one hundred and twenty	2 00
Edward L. Morss, seventy-five additions to fifty	2 00
Robert D. Morss, twenty-five additions to one hundred and fifty	1 25

Philip B. Morss, twenty-five additions to one hundred and twenty-five	1 00
Winthrop C. Swain, twenty-five additions to sixty	75
GRASSES.—For fifty specimens:	
First prize, Olive L. French	5 00
For ten specimens:	
First prize, Joseph Murdoch	1 00
Second, Richard Murdoch	75
Gratuity:—	
John Murdoch, Jr., eighteen additions to thirty	2 00
SEDGES.—For thirty specimens:	
First prize, Joseph Murdoch	3 00
For twenty specimens:	
First prize, Richard Murdoch	2 00
Gratuities:—	
John Murdoch, Jr., twenty-three additions to forty-five	3 00
Olive L. French, seven additions to forty	1 00
FERNS.—For thirty specimens:	
First prize, Dorothea Clapp	5 00
For fifteen specimens:	
Second prize, Robert D. Morss	2 50
For ten specimens:	
Second prize, Philip B. Morss	1 50
Gratuities:—	
Roscoe G. Knight, seven additions to fifteen	1 25
John Murdoch, Jr., five additions to fifteen	1 00
SPRAYS OF LEAVES OF NATIVE TREES AND SHRUBS.—Collection, not less than thirty sheets, so arranged as to show both surfaces:	
First prize, Christine Dudley Clapp	3 00
Second, Roscoe G. Knight	2 00
Third, John Murdoch, Jr.	1 00
Gratuity:—	
Winthrop C. Swain, twenty sheets	75
Total for Gardens and Herbariums	$83 25

The amount of money appropriated by the Society for the use of the Committee was:

For Prizes and Gratuities	$125 00		
For Current Expenses	75 00		
		$200 00	
Received from sales of paper		4 25	
			$204 25
Awarded for School Gardens		$20 00	
Awarded for Herbariums		63 25	
Paper		18 04	
Advertising		19 60	
Expressage, posters, stamping, etc.		13 00	
Postage, wrappers, etc.		1 50	
Total Expense			135 39
Balance unexpended			$68 86

HENRY L. CLAPP, *Chairman*, Roxbury,
MISS KATHARINE W. HUSTON, Roxbury,
WILLIAM P. RICH, Chelsea,
CHARLES W. JENKS, Bedford,
MRS. H. L. T. WOLCOTT, Dedham,
HENRY S. ADAMS, Boston,
W. E. C. RICH, *Secretary*,
99 Moreland Street, Roxbury, Mass.

Committee on School Gardens and Children's Herbariums.

REPORT

OF THE

COMMITTEE ON NATIVE PLANTS

FOR THE YEAR 1901.

By Charles W. Jenks.

At the meeting of the Society May 4th last, it was voted "that Charles W. Jenks be appointed to award the prizes offered for Native Plants with liberty to call in the aid of such experts as he may think proper." As there have been no general exhibitions this year, there has been no work for your committee to do.

It seems to me, if the Society wishes to continue these exhibitions, which in past years have been so attractive to many visitors, a committee of three or five members should be chosen, as it is difficult for any one member to be present every Saturday, especially during the vacation season.

While I must decline to serve longer as the only member, I would be pleased to serve as one of three or five, should the Society so desire.

REPORT

OF THE

Committee on Forestry and Roadside Improvement

FOR THE YEAR 1901.

By HARVEY N. SHEPARD, CHAIRMAN.

To the President and Members of the Massachusetts Horticultural Society:—

The Committee on Forestry and Roadside Improvement respectfully report:

The work referred to in our previous reports of keeping in touch with the tree wardens and others in the Commonwealth for the purpose of furthering the welfare of our roadside trees has been kept up more actively than ever, both in the collection of supplementary material and in the supplying of information and advice. The interest grows and the service rendered becomes more important. The classifying of the material also has gone forward steadily and as rapidly as possible, but cannot, we greatly regret, be completed in season for this report. In our judgment, the work should be kept up, and next year should see a valuable report upon it.

We have distributed this year about eight hundred copies of the Circulars from the Boston Society of Natural History relative to the Protection of Native Plants in connection with our own Circular, and about four hundred copies of the Circular of the American Park and Outdoor Art Association.

In co-operation with like committees from the Appalachian Mountain Club and the Massachusetts Forestry Association we

met the Commissioners of the Greylock Reservation, made a careful examination of its condition, and have submitted previously to the three associations our unanimous opinions relative thereto.

The work begun upon another branch of our duties, in an endeavor to ascertain the economic value of wood planting in the Commonwealth, continues, and we trust to be able next year to make a report relative thereto.

The pamphlet containing the laws of the Commonwealth relative to forests and trees has been widely distributed, and the many communications sent to us show that it was greatly needed and has been of much value.

HARVEY N. SHEPARD,
NATHANIEL S. SHALER,
J. WOODWARD MANNING,
JAMES STURGIS PRAY,
HENRY S. HUNNEWELL,
Committee on Forestry and Roadside Improvement.

REPORT

OF THE

COMMITTEE OF ARRANGEMENTS

FOR THE YEAR 1901.

By JOSEPH H. WOODFORD, CHAIRMAN.

The past year has been one of unusual experience as far as our exhibitions have been concerned. Owing to the sale of our old Hall on Tremont Street, and our having to vacate the premises on the first day of May last, we were unable, after that date, to hold any exhibitions until we could occupy our new Hall in November. Consequently, the duties of your Committee have been much lighter than they would have been had the new Hall been completed earlier in the season.

It may not be polite or courteous to the Building Committee to criticise their work or the unfinished condition of the interior of the new building, but we cannot pass over the fact that not one member of the working committees of our Society was consulted as to the size of the halls, the convenience of access, the adaptability for exhibitions, or the accommodation of an audience visiting the exhibitions.

In our report for the year 1895 we pointed out the inadequacy of our then accommodations, and at that time intimated that we should "have a hall of easy access and of sufficient capacity to accommodate any and all of our exhibitions, and at the same time capacious enough to contain a large audience comfortably."

You see what we have got. The main hall in this building is not as large as the two halls in the old. There is no space convenient in the new building for the storage of tables, etc., when

out of use. The lights are too far away from the plants and flowers, and there is no accommodation for an audience.

To ameliorate these conditions, in part, we would recommend the digging out of the earth which was filled in, in the main hall, and covering the ground with a concrete floor; then extend a floor on the same level of the loggia over the whole space, thus bringing the exhibitions nearer the light, and, at the same time, affording sufficient storage accommodations for all furniture, etc., used in our exhibitions. Furthermore, we would recommend that three galleries be constructed, one on each side near the loggia, and one at the rear end of the hall, to accommodate the public, and when all this is done, to tint the walls some color which will not absorb light and destroy the color of flowers.

If these suggestions are carried out the alterations will in a great measure help the exhibitions and contribute to the comfort of an appreciative public.

The amount of money placed at the disposal of this Committee has only in part been expended, but that part judiciously and for the best interests of the Society. The receipts for admission to the two paying exhibitions, Spring and Chrysanthemum, show an increase over those of last year, which is extremely gratifying.

The Treasurer shows by his books receipts for the	
Spring Exhibition	$375 75
Chrysanthemum Exhibition	1,943 25
Making a total of	$2,319 00

which is in the Treasury of the Society.

Respectfully submitted,

JOSEPH H. WOODFORD,
ARTHUR H. FEWKES,
J. WOODWARD MANNING,
E. W. WOOD,
WARREN HOWARD HEUSTIS,
PATRICK NORTON,
ROBERT FARQUHAR,

Committee of Arrangements.

REPORT

TO THE

STATE BOARD OF AGRICULTURE

FOR THE YEAR 1901.

This year has been a very important one in the history of the Massachusetts Horticultural Society, as it marks the removal from their old building to their new building, corner of Massachusetts and Huntington Avenues.

On the first of May, 1901, the old hall was transferred to a syndicate and the work of tearing down was begun.

The old Horticultural Hall was dedicated in 1865.

The Society, with the exception of the Pennsylvania Horticultural Society, the first of its kind in this country, was organized March 17, 1829, fully incorporated in June of the same year with one hundred and forty members. The first exhibition of any size was the "Spring Exhibition," held March 19th, at which many flowers and plants were shown.

The new building was opened to the public June 4th, 1901 with the most notable and beautiful display of flowers ever seen in Boston. It was pronounced by experts to be the finest show ever given in the country. It was truly a floral triumph, there being a remarkable display of orchids, azaleas and other plants. Credit for the arrangement of the exhibition is due to Prof. C. S. Sargent, assisted by Miss Beatrix Jones.

A departure was made at this exhibition by having the building open on Sunday; thousands took advantage of the opportunity thus offered.

Weekly summer exhibits of fruits and flowers were omitted this year.

September 21st a meeting was held, and the building formally accepted by the Society.

In November the first real exhibition of the Society for prizes was held in the new building, the show in June being an opening exhibition of the building and not for premiums. This show, with the combination of Annual Chrysanthemum, Fruit, Plant, Flower and Vegetable Shows, offered opportunity for exhibitors from every department of horticulture, with a premium list of $3,000.

It was a very beautiful display, but I would suggest that the arrangement of flowers be left to one person, not to each exhibitor. In this manner combinations of color would be made more pleasing to the eye.

Respectfully submitted,

N. I. Bowditch,

Inspector.

REPORT

OF THE

Committee on Lectures and Publication

FOR THE YEAR 1901.

The Committee on Lectures and Publication submit the following report: We have had the following lectures delivered the past year, commencing January 12 and closing the course March 30:

January 12. Hardy Evergreen Trees and Shrubs and their Uses. By J. Woodward Manning, Reading.

January 19. The Trees of our Neighborhood. By Miss Emma G. Cummings, Brookline.

January 26. A Visit to Kew Gardens and Hampton Court. By Benjamin P. Ware, Marblehead.

February 9. Growing and Exhibiting Vegetables and Fruits. By Herbert R. Kinney, Worcester.

February 16. The Advancement of Market Gardening in the past Twenty-five Years. By Michael Sullivan, Revere.

February 23. A Quarter-Century's Evolution in American Horticulture. By Patrick O'Mara, New York, N. Y.

March 9. Fruit Culture in New England and its Development the Last Fifty Years. By Hon. Aaron Low, Hingham.

March 16. Parasitic Fungi. By Professor George F. Atkinson, Cornell University, Ithaca, N. Y. This lecture was delivered on the John Lewis Russell foundation.

March 23. Twenty Years of Peach Growing in Massachusetts. By John W. Clark, North Hadley.

March 30. Insects Injurious to Fruits and Vegetables. By Professor H. T. Fernald, Amherst.

As in former years, abstracts made from advance copies of the lectures have been printed in the *Evening Transcript* of the day when the lecture was delivered, and extra copies of these abstracts have been placed on the table on the next Saturday, and have been freely distributed and eagerly sought after. It is believed that no course of lectures has been listened to more attentively, or by larger audiences.

The Schedule of Prizes was, as hoped and anticipated, ready at the beginning of the year or a few days before, but the work on the TRANSACTIONS has been greatly hindered by the two removals of the Library and other property of the Society, which unavoidably consumed much of the time of the Secretary and Librarian and his assistants. And even now that we are comparatively settled, our distance from the business portion of the city is found a serious obstacle to the speedy printing of the Society's publications. Part II of 1900 has been printed and distributed during the year, and Part I for 1901 is nearly all in type.

Respectfully submitted,

AARON LOW,
JAMES H. BOWDITCH,
E. W. WOOD,
Committee.

REPORT

OF THE

COMMITTEE ON THE LIBRARY

FOR THE YEAR 1901.

By WM. E. ENDICOTT, CHAIRMAN.

The number of books purchased this year has been much smaller than in many other years for the obvious reason that from April to October the library had no permanent quarters. A larger part of our appropriation than usual has been devoted to binding, very much of which has been done.

Our books have been moved twice during the year; in April from our old hall to the Tremont Building, and six months later to the present library room. These transfers were admirably planned and carried out, we believe, as well as could be done, but it was not possible to prevent damage entirely.

Of the present library room it is not necessary to say much, it speaks for itself; the Library Committee has had absolutely nothing to do with planning or furnishing it. It seems to us that much harm will come to the books unless glass doors be fitted to the cases, and it is obvious that the shelves, all of which are eight inches deep, are not adapted to take books fourteen inches wide; but these things, we hope, may soon be remedied.

At a recent meeting, the Society voted that any further furnishing of the library room should be entrusted to the Library Committee, and we shall give our earnest attention and endeavors to make good such defects as may be found to exist.

WM. E. ENDICOTT,
GEORGE W. HUMPHREY,
WALTER S. PARKER,
GEORGE E. DAVENPORT,
CHARLES W. SWAN,
} *Library Committee.*

The New Library.

REPORT

OF THE

SECRETARY AND LIBRARIAN

FOR THE YEAR 1901.

For many years the difficulty of avoiding in these reports from year to year an appearance of sameness has been remarked on, but this year the completion of the Society's new building and the removal to it of the library and all other departments of the Society's work, has made a break in that sameness which has not occurred before for thirty-five years, and is not likely to occur again for many more. Owing to the failure of the contractor to complete the new building by the time when our lease of the old one expired, it seemed expedient to hire temporary rooms for the deposit of the library, and a convenient suite of rooms in the Tremont Building, comprising, besides quiet and pleasant rooms for the accommodation of the library, a room for the meetings of the Society and Committees, were procured, these rooms being all fireproof. To them the books and bookcases were conveyed, and the former placed in the latter, so that they could be as well consulted as in the old room. Though this course involved two removals, instead of the one which we had hoped would be sufficient, it was undoubtedly better for the welfare of the books as well as for their usefulness, than if they had been stored in bulk in a storage warehouse. I regret, however, that it was not better understood among the members of the Society, that the books were as accessible for home use or consultation by them as they ever had been.

Both removals and rearrangements were affected in a skilful and expeditious manner under the immediate direction of Miss C. M. Endicott, who deserves much credit therefor. So far as is now known this was done without the loss of a single book, and so

careful were the teamster and his assistants employed to convey them from place to place, that not one of the two hundred panes of glass (mostly large ones) in the bookcases was broken.

The want of increased accommodations as a serious obstacle to ready reference to many books was first brought to the attention of the Society by the Library Committee in their report in 1875. The bookcases added since have afforded a relief, which though indispensable, has never been sufficient to afford proper accommodation to the books, and it is a great satisfaction to feel that after the lapse of twenty-five years we have shelf room of such extent as not only to show the back of every book but to afford room for the additions of future years. But it is a great drawback to this satisfaction to be obliged to say that the shelves, with which the library was fitted by the Building Committee, were found so narrow that more than two thousand volumes are too large to be supported by them.

Not so many books have been purchased as in some previous years, but among those worthy of special mention are Rouy's Illustrationes Plantarum Europæ Rariorum, thus far comprising fifteen fascicles, with three hundred and seventy-five plates; thirteen volumes of Morot's Journal de Botanique; Saccardo's La Botanica in Italia; Theophrastus, de Historia Plantarum (the best edition); Torrey, Eddy and Knevels's Catalogue of Plants within thirty miles of the City of New York, Albany, 1819; Clute's Our Ferns in their Haunts; Gardens, Old and New; Miss Jekyll's Wall and Water Gardens; Mrs. Earle's Old Time Gardens; the Pomologie de la France, in eight volumes, with beautifully colored plates; Bailey's Principles of Vegetable Gardening; and Marshall's Mushroom Book. Fascicles 123-125 of Martius's Flora Brasiliensis; Vol. 3 of Bailey's Cyclopedia of American Horticulture; and the continuation of may other serial works have been received.

When the work of removal was begun, it was necessary to pursue it as far as possible to the exclusion of all other work, and consequently as much progress has not been made on the publications of the Society as I could have wished. The Schedule of Prizes of 1901 was as usual ready on the first of January, and we trust that that for 1902 will be equally prompt, but it must be understood that the distance of our location from any printing

office is a serious obstacle to prompt despatch of such work. Part II of our Transactions for 1900 was issued early in the year, and Part I for 1901 is nearly all in type.

If I may return to the subject of the library, I would close this Report with the words with which Mr. Parkman, then Chairman of the Library Committee, closed his first report after the occupation of the Tremont Street Hall— "Our library may be said to bear to this noble building the relation which the brain bears to the body, and the Society is aware of the importance to its interests of replenishing and invigorating this vital part."

ROBERT MANNING,
Secretary and Librarian.

CORRECTION.

In Part I, 1901, of the Transactions, the names of two of the plates — *Tsuga Sieboldii* and *Thuya occidentalis* var. *aurea*— should be transposed.

TREASURER'S REPORT.

FOR THE YEAR 1901.

MASSACHUSETTS HORTICULTURAL SOCIETY, *in account current with* CHARLES E. RICHARDSON, *December 31st, 1901.*

DR.

To amount paid on New Building					$197,913 28
" " " for Furniture and Exhibition Ware					449 65
" " " on account of Library			$416 66		
" " " from income of John S. Farlow fund			161 95		
" " " from income of J. D. Williams French fund			182 30		
					760 91
" " " Interest on funds for Prizes, credited opposite					2,026 06
" " " for Heating			$1,008 15		
" " " " Lighting			319 69		
" " " " Water rates			109 23		
" " " " Labor			2,098 50		
" " " " Stationery, Printing and Postage			1,905 36		
" " " " Incidentals			1,532 89		
" " " " Repairs			43 98		
" " " " " to Furniture, etc.			302 00		
" " " " Committee of Arrangements			175 30		
" " " " " on School Gardens and Children's Herbariums			50 64		
" " " " Lectures and Publications			255 00		
" " " " Committee on Forestry and Roadside Improvement			147 64		
" " " " Salaries of Treasurer, Secretary and Assistants			4,300 00		
" " " " Salaries of Committees			897 00		
" " " " Tax on So. Boston Property			140 06		
Amounts carried forward				$13,285 44	$201,149 90

Amounts brought forward	$13,285 44	$201,149 90
To amount paid for Abating nuisance on So. Boston Property . .	55 48	
" " " " Electric Power . . .	37 53	
" " " " Rent of Building, 101 Tremont Street . . .	10,000 00	
" " " " Rent of Rooms in Tremont Building and Chickering Hall	1,858 31	
" " " " Legal Services . . .	58 70	
" " " " Storage	202 50	
		25,497 96
" " " " Prizes awarded in 1900, paid in 1901, viz.:		
H. H. Hunnewell Prizes for Rhododendrons	105 00	
Prizes for Plants	1,839 88	
" " Flowers	2,237 32	
" " Fruit	1,586 00	
" " Vegetables	1,181 50	
" " Gardens and Greenhouses .	451 80	
" " Native Plants	160 20	
" " School Gardens and Children's Herbariums	100 00	
		$7,661 70
		$234,309 56
Balance of Cash December 31st, 1901 . . .		26,481 72
		$260,791 28

CR.

By Balance of account rendered December 31st, 1900 . .			$74,864 73
" Building in 1901: —			
Rent of Halls . . .	$1,230 34		
" " Stores . . .	2,255 50		
		$3,485 84	
" Annual Exhibitions, Gross . .	2,319 00		
Less Expenses . . .	946 11		
		1,372 89	
" Admissions and Assessments . . .		1,246 00	
" Mt. Auburn Cemetery		4,641 00	
" State Bounty		600 00	
Amounts carried forward . . .		$11,345 73	$74,864 73

Amounts brought forward . . .		$11,345 73	$74,864 73
By Interest on Bonds . . .	$10,195 00		
" " " Loan . . .	3,231 53		
" " " Bank Balances .	720 80		
		14,147 33	
" Insurance		113 66	
" J. D. Williams French		5,000 00	
" Francis Brown Hayes Bequest . . .		23,293 77	
" Loan on Call		130,000 00	
" Interest credited following Funds charged opposite:			
Samuel Appleton Fund .	$50 00		
John A. Lowell " .	50 00		
Theodore Lyman " .	550 00		
Josiah Bradlee " .	50 00		
Benjamin V. French " .	25 00		
W. J. Walker " .	117 72		
Levi Whitcomb " .	25 00		
Benjamin B. Davis " .	25 00		
Marshall P. Wilder " .	50 00		
John Lewis Russell " .	50 00		
H. H. Hunnewell " .	200 00		
Francis Brown Hayes " .	500 00		
Henry A. Gane " .	50 00		
John S. Farlow " .	100 00		
J. D. Williams French " .	183 34		
		2,026 06	
			185,926 55
			$260,791 28

CHARLES E. RICHARDSON,
Treasurer.

Approved:

WALTER HUNNEWELL, } *Finance*
O. B. HADWEN, } *Committee.*

AUDITOR'S CERTIFICATE.

28 State Street, Boston, February 18th, 1902.

MESSRS. WALTER HUNNEWELL,
ARTHUR F. ESTABROOK,
O. B. HADWEN,

Finance Committee of the
Massachusetts Horticultural Society.

Gentlemen:—In compliance with your request, I made a thorough audit of the books and general accounting affairs of the Massachusetts Horticultural Society for the year which ended with the 31st day of December, 1901, and herewith submit to you my report of the same.

Report.

I added the ledger, journal and cash book and the small books tributary to the cash book and saw that all balances were correctly carried forward. I examined and checked the vouchers representing the disbursements during the year and found the amount of cash required by the cash book upon the first day of January, 1902, to have been on hand, and also examined the securities of the Society in the custody of the Treasurer and found that they were in all instances in accordance with the requirements of the record. I traced all postings from the journal and cash book into the ledger and proved the correctness of the balance sheet taken from the ledger as of the 31st day of December, 1901, which is a true statement of the financial condition of the Society upon said date, to the best of my knowledge and belief.

In short, I satisfied myself that the work in connection with the accounting affairs of the Society was being conscientiously and honestly performed, and that there was every evidence of faithfulness upon the part of the Treasurer.

Yours very respectfully,

ANDREW STEWART,
Examiner of Accounts.

ASSETS AND LIABILITIES OF THE MASSACHUSETTS HORTICULTURAL SOCIETY.

DECEMBER 31, 1901.

ASSETS.

Real Estate	$515,997 36	
Furniture and Exhibition Ware	8,157 15	
Library	40,573 38	
Stereotype plates and copies of History	246 50	
Sinking Fund	23,872 50	
Chicago, Burlington & Quincy R. R. Bonds	1,000 00	
Kansas City, Clinton & Springfield " "	1,980 00	
Lake Shore & Michigan Southern " "	10,415 25	
Atchison, Topeka & Santa Fé " "	44,693 25	
Chicago, Burlington & Quincy, "Nebraska Extension" R. R. Bonds	50,012 50	
Chicago & West Michigan R. R. Bonds	9,987 50	
Kansas, Fort Scott & Memphis R. R. Bonds	27,523 75	
Chicago, Burlington & Quincy, Illinois Division R. R. Bonds	51,625 00	
City of Newton Bonds	24,228 75	
W. A. Hayes and A. P. Loring, Trustees	3,488 76	
Cash	26,481 72	
		$840,283 37

LIABILITIES.

Prize Funds invested in Bonds:			
Samuel Appleton Fund,	$1,000 00		
John A. Lowell "	1,000 00		
Theodore Lyman "	11,000 00		
Josiah Bradlee "	1,000 00		
Benjamin V. French "	500 00		
H. H. Hunnewell "	4,000 00		
W. J. Walker "	2,354 43		
Levi Whitcomb "	500 00		
Benjamin B. Davis "	500 00		
Marshall P. Wilder "	1,000 00		
J. Lewis Russell "	1,000 00		
Francis Brown Hayes "	10,000 00		
Henry A. Gane "	1,000 00		
John S. Farlow "	2,500 00		
J. D. Williams French "	5,000 00		
		$42,354 43	
Prizes for 1901 payable in 1902		8,200 00	
			$50,554 43
Surplus			789,728 94
			$840,283 37

CHARLES E. RICHARDSON,
Treasurer.

Membership Account of the Massachusetts Horticultural Society, December 31st, 1901.

Life Membership per last report		682	
Added in 1901		23	
Commuted from Annual		7	
			712
Deceased,			26
			686
Annual Membership per last report		199	
Added in 1901		7	
			206
Commuted to Life		7	
Deceased		5	
Resigned		3	
Dropped for non-payment for two years		7	
			22
			184
Present Membership			870

INCOME FROM MEMBERSHIP.

23 new Life Members @ $30	$690 00
7 Commuted to Life @ $20	140 00
7 new Annual Members @ $10	70 00
Assessments	346 00
	$1,246 00

CHARLES E. RICHARDSON,
Treasurer.

Dr. *Massachusetts Horticultural Society in account with the Proprietors of the Cemetery of Mount Auburn.* **Cr.**

For Sales and Improvements within the Cemetery for the year ending December 31st, 1901.

To cost of filling up and improving land at Mount Auburn for the year ending December 31st, 1901. The Massachusetts Horticultural Society being charged with their proportion of same:					
Rear of Walnut Avenue and Fern Path	$380	78			
Magnolia Avenue	3	15			
Between Cherry and Birch Avenues	150	38			
Glen Avenue	22	88			
	$557	19			
One-fourth part of $557.19	$139	30			
Balance due Mass. Horticultural Society,	4,641	00			
			$4,780	30	

By Sales in January				$1,115	00
" " " February				600	00
" " " March				40	00
" " " April				1,462	50
" " " May				4,689	50
" " " June				3,423	20
" " " July				732	00
" " " August				1,151	00
" " " September				1,610	00
" " " October				2,995	00
" " " November				1,480	00
" " " December				70	00
			$19,368	20	
Net amount received from Receiving Tomb			1,193	00	
			$20,561	20	
Less graves repurchased			40	00	
			$20,521	20	
Deduct for Annual Expense			1,400	00	
			$19,121	20	
One-fourth of $19,121.20			$4,780	30	

E. & O. E.

JOHN L. DILL, *Treasurer.*

BOSTON, December 31, 1901.

THE MASSACHUSETTS HORTICULTURAL SOCIETY

To the PROPRIETORS OF THE CEMETERY OF MOUNT AUBURN. *Dr.*

To cost of filling up and improving land at Mount Auburn for the year ending Dec. 31st, 1901. The Massachusetts Horticultural Society being charged with their proportionate part.

Rear of Walnut Avenue and Fern Path.

130.4 days, man	$293 40	
23.3 days, man and horse	87 38	
		$380 78

Magnolia Avenue.

1.4 days, man	$3 15	3 15

Between Cherry and Birch Avenues.

40.1 days, man and horse	150 38	150 38

Glen Avenue.

6.1 days, man and horse	22 88	22 88
		$557 19
One-fourth of $557.19		$139 30

JAMES C. SCORGIE,
Supt. of the Cemetery of Mount Auburn.

MOUNT AUBURN, December 31, 1901.

I certify the above to be a true copy of improvements for the year 1901 as rendered by the Superintendent.

JOHN L. DILL,
Treasurer.

Massachusetts Horticultural Society.

OFFICERS AND STANDING COMMITTEES FOR 1902.

President.
O. B. HADWEN, of Worcester.

Vice-Presidents.

BENJAMIN P. WARE, of Clifton.
SAMUEL HOAR, of Concord.
JOSEPH R. LEESON, of Newton Centre.
OAKES AMES, of North Easton.

Treasurer and Superintendent of the Building.
CHARLES E. RICHARDSON, of Brookline.

Secretary and Librarian.
ROBERT MANNING, of Salem.*

Professor of Botany and Vegetable Physiology.
BENJAMIN M. WATSON, of Jamaica Plain.

Professor of Entomology.
SAMUEL H. SCUDDER, of Cambridge.

Delegate to the State Board of Agriculture.
WILLIAM H. SPOONER, of Jamaica Plain.

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* Communications to the Secretary, on the business of the Society, should be addressed to him at Horticultural Hall, Boston.

STANDING COMMITTEES.

Executive.

THE PRESIDENT, O. B. HADWEN, CHAIRMAN.

THE CHAIRMAN OF THE FINANCE COMMITTEE, WALTER HUNNEWELL, *Ex officio.*

WILLIAM C. STRONG.
WILLIAM H. SPOONER.
NATHANIEL T. KIDDER.
FRANCIS H. APPLETON.
BENJAMIN C. CLARK.
CHARLES W. PARKER.
CHARLES F. CURTIS.

Finance.

WALTER HUNNEWELL, OF BOSTON, CHAIRMAN.

O. B. HADWEN.
ARTHUR F. ESTABROOK.

Lectures and Publication.

AARON LOW, OF HINGHAM, CHAIRMAN.

JAMES H. BOWDITCH.
E. W. WOOD.

Library.

WILLIAM E. ENDICOTT, OF CANTON, CHAIRMAN.

GEORGE W. HUMPHREY.
WALTER S. PARKER.
GEORGE E. DAVENPORT.
CHARLES W. SWAN.

Plants.

ARTHUR H. FEWKES, OF NEWTON HIGHLANDS, CHAIRMAN.

JAMES WHEELER.
WILLIAM J. MARTIN.
ROBERT CAMERON.
ROBERT MELROSE GREY.

Flowers.

J. WOODWARD MANNING, OF READING, CHAIRMAN.

MICHAEL H. NORTON.
KENNETH FINLAYSON.
FREDERICK S. DAVIS.
JAMES COMLEY.

Fruits.

E. W. WOOD, OF WEST NEWTON, CHAIRMAN.

CHARLES F. CURTIS.
WARREN FENNO.
J. WILLARD HILL.
GEORGE F. PIERCE.
JOHN L. BIRD.
FREDERICK W. DAMON.

Vegetables.

WARREN H. HEUSTIS, OF BELMONT, CHAIRMAN.

VARNUM FROST.
WALTER RUSSELL.
AARON LOW.
GEORGE D. MOORE.
JOSHUA C. STONE.
MICHAEL SULLIVAN.

Forestry and Roadside Improvement.

HARVEY N. SHEPARD, CHAIRMAN.

NATHANIEL S. SHALER. HENRY S. HUNNEWELL.
J. WOODWARD MANNING. JAMES STURGIS PRAY, SECRETARY.

Gardens.

PATRICK NORTON, OF DORCHESTER, CHAIRMAN.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND ARRANGEMENTS, *Ex officiis*.

HENRY W. WILSON. JACKSON T. DAWSON.

For Establishing Prizes.

WILLIAM H. ELLIOTT, OF BRIGHTON, CHAIRMAN.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND GARDENS, *Ex officiis*.

WILLIAM J. MARTIN.

Committee of Arrangements.

JOSEPH H. WOODFORD, OF BOSTON, CHAIRMAN.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND GARDENS, *Ex officiis*.

ROBERT FARQUHAR.

MEMBERS FOR LIFE.

Members of the Society and all other persons who may know of deaths, changes in residence, or other circumstances showing that the following list is incorrect in any particular, will confer a favor by promptly communicating to the Secretary any needed corrections.

Information, or any clew to it, is especially desired in regard to members whose names are marked thus.†

Adams, Mrs. Charles Francis, South Lincoln.
Adams, Henry Saxton, Boston.
Alger, Rev. R. F., Dorchester.
Allen, Hon. Charles H., Lowell.
Allen, Thomas, Boston.
Ames, F. Lothrop, North Easton.
Ames, Mrs. F. L., North Easton.
Ames, George, Boston.
Ames, John S., North Easton.
Ames, Miss Mary S., North Easton.
Ames, Oakes, North Easton.
Ames, Oliver, North Easton.
Ames, Mrs. Oliver, Sr., North Easton.
Ames, Preston Adams, Boston.
Ames, Miss Susan E., North Easton.
Amory, C. W., Boston.
Amory, Frederick, Boston.
Anderson, Larz, Brookline.
Andrews, Charles L., Milton.
Andrews, Frank W., Washington, D. C.
Andros, Milton, San Francisco, Cal.
Appleton, Francis H., Boston.
Appleton, William S., Boston.
Arnold, Mrs. George Francis, Brookline.
Ash, John, Pomfret Centre, Conn.
Asmus, Ernst G., West Hoboken, N. J.
Atkins, Edwin F., Belmont.
Ayer, James B., Boston.

Bailey, Jason S., West Roxbury.
Baker, James E., South Lincoln.
Ball, George H., Boston.
Banfield, Francis L., M.D., Worcester.
Barber, J. Wesley, Newton.
Barnard, James M., Boston.
Barnard, Robert M., Everett.
Barnes, Walter S., Somerville.
† Barney, Levi C., Boston.
Barry, John Marshall, Boston.
Barry, William C., Rochester, N. Y.
Bartlett, Edmund, Newburyport.
Bartlett, Francis, Beverly.
Bartlett, Miss Mary F., Boston.
Bates, Miss Mary D., Ipswich.
Baylies, Walter C., Taunton.
Beal, Leander, Swampscott.
Becker, Frederick C., Cambridge.
Beckford, Daniel R., Jr., Dedham.
Beebe, E. Pierson, Boston.
Beebe, Franklin H., Boston.
Beebe, J. Arthur, Boston.
Bigelow, Albert S., Cohasset.
Bigelow, Joseph S., Cohasset.
Bigelow, Dr. William Sturgis, Boston.
Black, George N., Manchester.

Blake, Miss Anne, Brookline.
Blake, Mrs. Arthur W , Brookline.
Blake, Edward D., Boston.
Blake, Francis, Weston.
Blake, Frederick A., Rochdale.
Blakemore, John E., Roslindale.
Blanchard, John W., West Newton.
Blinn, Richard D., Chicago, Ill.
Bliss, William, Boston.
Boardman, Samuel M., Hyde Park.
Boardman, T. Dennie, Manchester.
Bôcher, Prof. Ferdinand, Cambridge.
Bockus, Charles E., Dorchester.
Bosler, Frank C., Carlisle, Penn.
Bowditch, Charles P., Jamaica Plain.
Bowditch, Ernest W., Milton.
Bowditch, James H., Brookline.
Bowditch, Nathaniel I., Framingham.
Bowditch, William E., Roxbury.
Bowker, William H., Boston.
Brackett, Cephas H., Newton.
Breck, Joseph Francis, Allston.
Bremer, Mrs. John L., Manchester.
Bresee, Albert, Hubbardton, Vt.
Brewer, Francis W., Hingham.
Briggs, William S., Lincoln.
Brigham, William T., Honolulu, Hawaii.
Brooks, Henry, Lincoln.
Brooks, J. Henry, Milton.
Brooks, Lawrence, Groton.
Brooks, Peter C., Boston.
Brooks, Shepherd, Boston.
Brown, Alfred S., Jamaica Plain.
Brown, Edward J., Weston.
Brown, George Barnard, Brookline.
Brown, John M., Belmont.
Brown, Samuel N., Boston.
Burlen, William H., Boston.
Burnett, Harry, Southborough.
Burnham, John A , Manchester.
Burnham, Lamont G., Essex.
Burr, Matthew H., Hingham.
Buswell, Frank E., Brooklyn, N Y.
Butler, Aaron, Wakefield.
Butler, Edward K., Jamaica Plain.
Cabot, Dr. Arthur T., Boston.
†Cadness, John, Flushing, N. Y.
Cains, William, South Boston.
Calder, Augustus P., Boston.
Cameron, Robert, Cambridge.
Campbell, Francis, Cambridge.
Capen, John, Boston.
Carlton, Samuel A., Boston.
Carr, Hon. John, Roxbury.
Carter, Charles N., Boston.
Carter, Miss Maria E., Woburn.
Cartwright, George, Dedham.
Casas, W. B. de las, Malden.
Chadbourne, Marshall W., East Watertown.
Chaffin, John C., Newton.
Chamberlain, Chauncy W., Brookline.
†Chase, Andrew J., Lynn.
Chase, Daniel E., Somerville.
Chase, George B., Dedham.
Chase, William M , Dorchester.
Cheney, Amos P , Natick.
Cheney, Mrs. Elizabeth S., Wellesley.
Childs, Nathaniel R., Boston.
Choate, Charles F., Southborough.
Christie, William, Chelsea.
Claflin, Hon. William, Newtonville.
Clapp, Edward B., Dorchester.
Clapp, James H., Dorchester.
Clapp, William C., Dorchester.
Clark, Benjamin C., Boston.
Clark, B. Preston, Cohasset.
Clark, Miss Eleanor J., Pomfret Centre, Conn.
Clark, J. Warren, Rockville.
Clarke, Miss Cora H., Boston.
Clarke, Eliot C., Boston.
Cleary, Lawrence, Roxbury.
Clough, Micajah Pratt, Lynn.
Cobb, John C., Milton.
Coburn, Isaac E., Everett.
Codman, James M., Brookline.
Codman, Ogden, South Lincoln.
Coe, Miss Mary Alma, Boston.

Coffin, Abraham B., Winchester.
Cole, Edward E., Boston.
Collamore, Miss Helen, Boston.
Colton, Samuel H., Worcester.
Converse, Elisha S., Malden.
Converse, Col. H. E., Malden.
Coolidge, Joshua, Mount Auburn.
Coolidge, J. Randolph, Chestnut Hill.
Coolidge, Mrs. J. Randolph, Chestnut Hill.
Coolidge, T. Jefferson, Jr., Boston.
Cottle, Henry C., Boston.
Cox, Thomas A., Dorchester.
Coy, Samuel I., Boston.
Craig, William Nicol, North Easton.
Crane, Zenas, Dalton.
Crawford, Dr. Sarah M., Roxbury.
Crocker, Hon. George G., Boston.
Crocker, Miss S. H., Boston.
Crosby, George E., West Medford.
Cross, Alfred Richard, Nantasket.
Crowell, Randall H., Watertown.
Curtis, Charles F., Jamaica Plain.
Curtis, Charles P., Swampscott.
Curtis, Charles P , Jr., Boston.
Cushing, Livingston, Weston.
Cushing, Robert M., Boston.
Cutting, Gen. Walter, Pittsfield.

† Daggett, Henry C., Boston.
Dalton, Charles H., Beverly.
Daly, John C., Roxbury.
Damon, Frederick W., Arlington.
Dana, Charles B., Wellesley.
Daniels, Dr. Edwin A., Boston.
Davenport, Albert M., East Watertown.
Davenport, George E., Medford.
Davis, Edward L., Worcester.
Davis, John, Lowell.
Davis, L. Shannon, Brookline.
Dawson, Jackson T., Jamaica Plain.
Dee, Thomas W., Cambridge.
Denny, Clarence H., Boston.
Denton, Eben, Dorchester.
Dexter, F. Gordon, Boston.
Dexter, George, Beverly.
Dike, Charles C., Stoneham.
Doliber, Thomas, Brookline.
Donald, William, West Roxbury.
Donaldson, James, Roxbury.
Dorr, George, Dorchester.
Dove, George W. W., Andover.
Dowse, William B. H., West Newton.
Draper, Hon. Eben S., Hopedale.
Draper, George A., Hopedale.
Dreer, William F., Philadelphia, Pa.
Dumaresq, Herbert, Chestnut Hill.
Duncan, James L., Chelsea.
Dunlap, James H., Nashua, N. H.
Durant, William, Boston.
Durfee, George B., Fall River.
Dutcher, Frank J., Hopedale.
Dwight, Theodore F., Kendal Green.

Eaton, Horace, Cambridge.
Edgar, William W., Waverly.
Eldredge, H. Fisher, Boston.
† Eldridge, E. H., Roxbury.
Elliot, Mrs. John W., Boston.
Elliott, William H., Brighton.
Endicott, William, Boston.
Endicott, William, Jr., Boston.
Endicott, William C., Jr., Danvers.
Endicott, William E., Canton.
Estabrook, Arthur F , Boston.
Ewell, Warren, Dorchester.

Fairchild, Charles, Boston.
Falconer, William, Pittsburgh, Pa.
Farlow, Lewis H., Newton.
Farnsworth, Mrs. William, Dedham.
Farquhar, James F. M., Roslindale.
Farquhar, John K. M. L , Roxbury.
Farquhar, Robert, North Cambridge.
Faxon, John, Quincy.
Fay, H. H., Wood's Holl.
Fay, Joseph S., Jr., Wood's Holl.
Fenno, L. Carteret, Boston.
Fessenden, George B., Allston.
Fewkes, Arthur H., Newton Highlands.

Finlayson, Kenneth, Brookline.
Fisher, Peter, Ellis.
Flagg, Augustus, Boston.
Fletcher, George V., Belmont.
Fletcher, J. Henry, Belmont.
Fletcher, John W., Chelsea.
Flint, David B., Boston.
Foster, Charles H. W., Brookline.
Foster, Francis C., Cambridge.
Fottler, John, Jr., Dorchester.
Fowle, George W., Jamaica Plain.
Fowle, William B., Auburndale.
French, Miss Caroline L. W. Boston.
French, S. Waldo, Jamaica Plain.
French, W. Clifford, Cambridge.
Frohock, Roscoe R., Malden.
Frost, Irving B., Belmont.
Frost, Varnum, Arlington.

Galloupe, Charles W., Swampscott.
Galvin, John, Boston.
Gardner, Mrs. Augustus P., Hamilton,
Gardner, George A., Boston.
Gardner, George P., Boston.
Gardner, John L., Boston.
Gardner, Mrs. John L., Brookline.
Gardner, William Amory, Groton.
Gaston, William A., Boston.
Gibbs, Wolcott, M.D., Newport, R.I.
Gill, George B., Medford.
Gillard, William, Dorchester.
Gilmore, E. W., North Easton.
Gilson, F. Howard, Wellesley Hills.
Glover, Joseph B., Boston.
Goddard, Joseph, Sharon.
Goodell, L. W., Dwight.
Gorham, James L., Jamaica Plain.
† Gould, Samuel, Boston.
Gowing, Mrs. Clara E., Kendal Green.
Gray, James, Wellesley.
Gray, Mrs. John C., Boston.
Gregory, Hon. James J. H., Marblehead.
Grew, Edward S., Boston.
Grey, Benjamin, Malden.

Hadwen, Obadiah B., Worcester.
Hale, James O., Byfield.
Hall, Edwin A., Cambridgeport.
Hall, George A., Chelsea.
Hall, Jackson E., Boston.
Hall, Osborn B., Malden.
Hall, William F., Brookline.
Halliday, William H., South Boston.
Hammond, Gardiner G, New London, Conn.
Hammond, George W., Boston.
† Harding, George W., Arlington.
Harding, Louis B., Chestnut Hill.
Hardy, F. D., Cambridgeport.
Harlow, James F., Quincy.
Harris, Charles, Cambridge.
Harris, Thaddeus William, A.M., Keene, N. H.
Hartshorn, Arthur E., Worcester.
Harwood, George Fred, Newton.
Haskell, Edwin B., Auburndale.
Hastings, Levi W., Brookline.
Hatch, Mrs. C. S., North Cambridge.
Hatch, Edward, Boston.
Haven, Franklin, Boston.
Hawken, Mrs. Thomas, Rockland, Me.
Hayward, George P., Roxbury.
† Hazeltine, Hazen, Boston.
Hemenway, Augustus, Canton.
Hemenway, Mrs. Augustus, Canton.
Henshaw, Joseph P. B., Boston.
Henshaw, Samuel, Cambridge.
Heurlin, Julius, South Braintree.
Hewett, Miss Mary C., Canton.
Hews, Albert H., North Cambridge.
Higginson, Francis L., Boston.
Hilbourn, A. J., Boston.
Hill, John, Stoneham.
Hittinger, Jacob, Mt. Auburn.
Hoar, Samuel, Concord.
Hodgkins, John E., Portsmouth, N.H.

Hoitt, Hon. Charles W., Nashua, N. H.
Hollingsworth, Amor L., Milton.
Hollingsworth, Z T., Boston.
Hollis, George W., Grantville.
Holmes, Edward J., Boston.
Holt, Gustavus C., Belmont.
Holt, Mrs. Stephen A., Cambridge.
Holt, William W., Winchester.
Hooper, William, Boston.
Horner, Mrs. Charlotte N.S., Georgetown.
Horsford, Miss Kate, Cambridge.
Hovey, Charles H., South Pasadena, Cal.
Hovey, Stillman S., Woburn.
Howard, Joseph W., Somerville.
Hubbard, Charles Wells, Weston.
Hubbard, James C., Everett.
Humphrey, George W., Dedham.
Hunnewell, Arthur, Wellesley.
Hunnewell, Henry Sargent, Wellesley.
Hunnewell, H. Hollis, Wellesley.
Hunnewell, Walter, Wellesley.
Hunt, Dudley F., Reading.
Hunt, Francis W., Melrose.
Hunt, Franklin, Charlestown, N. H.
Hunt, William H , Concord.

Jack, John George, Jamaica Plain.
Jackson, Charles L., Cambridge.
Jackson, Robert T., Boston.
James, George Abbot, Nahant.
Janvrin, William S., Revere.
Jeffries, William A., Boston.
Jenks, Charles W., Bedford.
Johnson, J. Frank, Malden.
Jones, Jerome, Brookline.
Jones, Dr. Mary E., Boston.
Jordan, Eben D., Boston.
Jordan, Henry G., Hingham.
Jose, Edwin H., Cambridgeport.

Kakas, Edward, West Medford.
Kellen, William V., Marion.
Kelley, George B., Jamaica Plain.
Kendall, D. S., Woodstock, Ont.
Kendall, Edward, Cambridgeport.
† Kendall, Joseph R., San Francisco, Cal.
Kendall, Dr. Walter G., Atlantic.
Kendrick, Mrs. H. P., Allston.
Kennedy, George G., M. D., Roxbury.
Kent, John, Chestnut Hill.
Keyes, John M., Concord.
Kidder, Charles A., Southborough.
Kidder, Nathaniel T., Milton.
† Kimball, A. P., Boston.
Kimball, David P., Boston.
King, D. Webster. Boston.
Kingman, Abner A., Brookline.
Kingman, C. D., Middleborough.
Kinney, H. R., Worcester.
Knapp, Walter H., Newtonville.

Lamb, Horatio A., Milton.
Lancaster, Charles B., Boston.
Lanier, Charles, Lenox.
Lawrence, Amory A., Boston.
Lawrence, Amos A., Boston.
Lawrence, James, Groton.
Lawrence, John, Groton.
Lawrence, Rt. Rev. William, Boston.
Learned, Charles A., Arlington.
Lee, Daniel D., Jamaica Plain.
Lee, Francis H., Salem.
Lee, George C., Newton.
Leeson, Hon. Joseph R., Newton Centre.
Lemme, Frederick, Charlestown.
Leuchars, Robert B., Dorchester.
Lincoln, George, Hingham.
Lincoln, Col. Solomon, Boston.
Little, James L., Brookline.
Little, John Mason, Swampscott.
Locke, Edwin F., West Medford.
Locke, Isaac H., Belmont.
Lockwood, Rhodes, Boston.
Lodge, Richard W., Boston.

Loftus, John P., Dorchester.
Loomis, Elihu G., Bedford.
Loring, Augustus P., Beverly.
Loring, Mrs. William Caleb, Beverly.
Lothrop, William S. H , Boston.
† Lowder, John, Watertown.
Lowell, Abbott Lawrence, Boston.
Luke, Otis H., Brookline.
Lumb, William, Boston.
Lunt, William W., Hingham.
Lyman, George H., Wareham.
Lyman, Mrs. Theodore, Brookline.

Mabbett, George, Plymouth.
Mackie, George, M. D., Attleboro.
† Mahoney, John, Boston.
Mallett, E. B., Jr., Freeport, Me.
Mann, James F., Ipswich.
Manning, Jacob W., Reading.
Manning, J. Woodward, Reading.
Manning, Mrs. Lydia B., Reading.
Manning. Robert, Salem.
Manning, Warren H., Brookline.
Marshall, Frederick F., Everett.
Marston, Howard, Boston.
Mason, Miss Ellen F., Boston.
Mason, Col. Frederick, Taunton.
Matthews, Nathan, Boston.
May, Frederick W. G., Boston.
McCarty, Timothy, Providence, R. I.
McWilliam, George, Whitinsville.
Melvin, James C., West Newton.
Merriam, Charles, Boston.
Merriam, Herbert, Weston.
Merrill, Hon. Moody, Roxbury.
Metivier, James, Cambridge.
Milmore, Mrs. Joseph, Washington, D. C.
Minot, Charles S., Milton.
Minton, James, Boston.
Mitton, Edward J., Brookline.
Mixter, George, Boston.
Monteith, David, Dedham.
Montgomery, Alexander, Natick.
Moore, George D., Arlington.
Moore, John H., Concord.
Morgan, George H., New York, N. Y.
Morse, John T., Jr., Boston.
Morse, Robert M., Jamaica Plain.
Moseley, Charles H., Dorchester.
Mudge, George A., Portsmouth, N. H.
Murdock, Albert L., Boston.
Murphy, William Bowen, Boston.
Murray, Peter, Fairhaven.
Mutch, John, Brookline.

Nevins, Mrs. David, Methuen.
Newman, John R., Winchester.
Newton, Rev. William W., Pittsfield.
Nickerson, Mrs. George A., Dedham.
Norton, Charles W., Allston.
Norton, Edward E., Boston.

Oakman, Hiram A., North Marshfield.
Olmsted, Frederick Law, Jr., Brookline.
Olmsted, John C., Brookline.
Orpet, Edward O., South Lancaster.

Page, Mrs. Henrietta, Boston.
Paige, Clifton H., Mattapan.
Parker, Charles W., Boston.
Parkman, Henry, Boston.
Parsons, John E., Lenox.
Partridge, Horace, North Cambridge.
Patten, Marcellus A., Tewksbury.
Paul, Alfred W., Dighton.
Peabody, Francis H., Boston.
Peabody, George A., Danvers.
Peabody, John E., Salem.
Peabody, S. Endicott, Salem.
Peck, O. H., Denver, Col.
Peck, William G , Arlington.
Peirce, Miss Marion W., Topsfield.
† Perry, George W., Malden.
Pfaff, Col. Charles, South Framingham.
Philbrick, William D., Newton Centre.
Phillips, John C., North Beverly.
Phillips, Mrs. John C., North Beverly.

Phillips, William, North Beverly.
Pierce, Dean, Brookline.
Pierce, Elisha N., Waltham.
Pierce, George Francis, Neponset.
Pond, Preston, Winchester.
Poor, John R., Brookline.
Pope, Col. Albert A., Cohasset.
Porter, Alexander S., Boston.
Porter, James C., Wollaston.
Porter, Hon. Joseph S., Washington, D. C.
Prang, Louis, Boston.
Pratt, Laban, Dorchester.
Pratt, Lucius G., West Newton.
Pratt, Robert M., Boston.
Prendergast, J. M., Boston.
Prescott, Eben C., New York, N. Y.
Pringle, Cyrus G., Charlotte, Vt.
Proctor, T. E., Boston.
Prouty, Gardner, Littleton.
Putnam, George, Manchester.
Putnam, George J., Brookline.
Putnam, Joshua H., Newton Centre.

Quinby, Hosea M., M.D., Worcester.

Raddin, Everett W., North Cambridge.
Rand, Harry S., North Cambridge.
Rand, Oliver J., Cambridgeport.
Rawson, Warren W., Arlington.
Ray, James F., Franklin.
Raymond, Walter, Boston.
Read, Charles A., Manchester.
Reardon, John B., Boston.
Reed, Henry R., Jamaica Plain.
Rice, George C., Worcester.
Richards, John J., Boston.
Richardson, Charles E., Brookline.
Richardson, Dr. William L., Boston.
Rinn, J. Ph., Boston.
Ripley, Charles, Dorchester.
Ripley, Ebed L., Hingham Centre.
Robbins, I. Gilbert, Melrose Highlands.
Robinson, John, Salem.
Robinson Joseph B , Dorchester.
Robinson, Warren J., Somerville.
Rogers, Mrs. Jacob C., Peabody.
Roland, Thomas, Nahant.
Rothwell, James E., Brookline.
Roy, David Frank, Malden.
Ruddick, William H., M.D., South Boston.
Russell, George, Woburn.
Russell, James S., Milton.
Russell, Hon. John E., Leicester.
Russell, Walter, Arlington.

Salisbury, William C. G., Brookline.
Saltonstall, Richard M., Newton.
Sanford, Oliver S., Hyde Park.
Sanger, Mrs. George P., Boston.
Sargent, Andrew Robeson, Brookline.
Sargent, Charles S., Brookline.
Sargent, Mrs. Charles S., Brookline.
Sargent, Mrs. Francis W., Wellesley.
Sawtelle, Eli A., Boston.
Sawyer, Timothy T., Boston.
Scorgie, James C , Cambridge.
†Scott, Charles, Newton.
Sears, Miss Clara E., Boston.
Sears, Miss Emily E., Boston.
Sears, Dr. Henry F., Boston.
Sears, J. Montgomery, Boston.
Sears, Mrs. J. Montgomery, Boston.
Shaler, Nathaniel S., Cambridge.
Sharp, Miss Helen, Boston.
Shaw, Christopher C., Milford, N. H.
Shaw, Francis, Wayland.
Shaw, Mrs. Robert G., Wellesley.
Sherman, William H., Boston.
Shorey, John L., Lynn.
Shuman, Hon. A., Roxbury.
Shurtleff, Josiah B., Jr., Revere.
Sias, Charles D., Wenham.
Siebrecht, H. A., New Rochelle, N.Y.
Simpkins, Miss Mabel, Yarmouth.
Skinner, Francis, Boston.
Skinner, Francis, Jr., Boston.

Sleeper, Henry Davis, Boston.
Smith, Archibald, West Somerville.
Smith, Calvin W., Wellesley Hills.
Smith, Charles H., Newton Highlands.
Smith, Charles S., Lincoln.
Smith, Edward N., San Francisco, Cal.
Smith, George O., East Lexington.
Smith, Thomas Page, Waltham.
Snow, Eugene A., Melrose.
Sohier, Col. William D., Beverly.
Souther, Charles H., Jamaica Plain.
Spaulding, Edward, West Newton.
Speare, Alden, Newton Centre.
Spooner, William H., Jamaica Plain.
Sprague, Hon. Charles F., Brookline.
Sprague, Isaac, Wellesley Hills.
Springall, George, Malden.
Stearns, Charles H., Brookline.
Stearns, Frank W., Newton.
Stedman, Henry R., M. D., Roslindale.
Stevens, Hon. Moses T., Andover.
Stewart, William J., Winchester.
Stone, Charles A., Newton.
Stone, Charles W., Boston.
Stone, Prof. George E., Amherst.
Stone, George F., Chestnut Hill.
Strater, Herman, Roxbury.
Strong, William C., Waban.
Swain, Charles E., Roxbury.
Sweet, Everell F., Malden.

Talbot, Mrs. I. Tisdale, Boston.
Taylor, Charles H., Boston.
Taylor, Horace B., Portland, Me.
Temple, Felker L., Boston.
Tenney, C. H., Methuen.
Thatcher, William, Brookline.
Thayer, Mrs. Alice R., Boston.
Thayer, Bayard, Lancaster.
Thayer, Mrs. Bayard, Lancaster.
Thayer, Eugene V. R., South Lancaster.
Thayer, Mrs. Eugene V. R., South Lancaster.
Thayer, John E., South Lancaster.
Thayer, Mrs. John E., South Lancaster.
Thayer, Nathaniel, Lancaster.
Thayer, Mrs. Nathaniel, Lancaster.
Thayer, S. V. R., Boston.
Thiemann, Hermann, Manchester.
Thomas, W. B., Manchester.
Thurlow, Thomas C., West Newbury.
Tilton, Stephen W., Roxbury.
Todd, John, Hingham.
Tolman, Benjamin, Concord.
Tolman, Miss Harriet S., Boston.
Toppan, Roland W., Malden.
Torrey, Everett, Charlestown.
Tower, Miss Ellen May, Lexington.
Tower, Mrs. Helen M., Cambridge.
Tower, Sylvester, Boston.
Travis, Charles B., Brighton.
Trepess, Samuel J., Glencove, L. I., N. Y.
Tucker, Lawrence, Boston.
† Turner, John M., Dorchester.

Underwood, Loring, Belmont.

Vander-Woerd, Charles, Waltham.
Vaughan, William Warren, Boston.
Vinal, Miss Mary L., Somerville.

Wakefield, E. H., Cambridge.
Walcott, Henry P., M.D., Cambridge.
Waldo, C. Sidney, Jamaica Plain.
Wales, George O., Braintree.
Walker, Miss Mary Sophia, Waltham.
Walley, Mrs. W. P., Boston.
Walsh, Michael H., Wood's Holl.
Waltham, George C., Dorchester.
Walton, Daniel G., Wakefield.
Ward, Francis Jackson, Roxbury.
Ward, John, Newton Centre.
Ware, Benjamin P., Clifton

Ware, Miss Mary L., Boston.
Warren, Samuel D., Dedham.
Washburn, Andrew, Hyde Hark.
Watson, Benjamin M., Jamaica Plain.
Watson, Thomas A., East Braintree.
Watts, Isaac, Waverly.
Webber, Aaron D., Boston.
Webster, Hollis, Cambridge.
Welch, David, Dorchester.
Weld, Christopher Minot, Jamaica Plain.
Weld, George W., Boston.
Weld, Richard H., Boston.
Weld, Gen. Stephen M., Dedham.
West, Mrs. Maria L.. Neponset.
Weston, Seth, Chelsea.
Wheeler, Frank, Concord.
Wheeler, James, Brookline.
Wheeler, Wilfred, Concord.
Wheelwright, A. C., Brookline.
Wheelwright, Edmund M., Boston.
Whitcomb, William B., Medford.
White, Mrs. Charles T., Boston.
White, Francis A., Brookline.
White, George R., Boston.
White, Joseph H., Brookline.
Whitney, Arthur E., Winchester.
Whitney, Ellerton P., Milton.
Whitney, Henry M., Cohasset.
Whittier, George E., Groton.
Whittier, William Benjamin, South Framingham.
Wigglesworth, George, Milton.
Wilbur, George B , West Newton.
Wilder, Edward Baker, Dorchester.
Wilder, Henry A., Malden.
Willard, E. W., Newport, R. I.
Willcutt, Levi L., Brookline.
Williams, Miss Adelia Coffin, Roxbury.
Williams, Benjamin B., Boston.
Williams, Henry Bigelow, Boston.
Williams, John Davis, Boston.
Williams, Philander, Taunton.
Willis, George W., Chelsea.
Willis, Joshua C., Roxbury.
Wilson, Col. Henry W., Boston.
Wilson, William Power, Boston.
Winthrop, Robert C., Jr., Boston.
Wood, William K., West Newton.
Woods, Henry, Boston.
Wright, George C., West Acton.
Wright, John G., Brookline.
Wyman, Oliver B., Shrewsbury.
Wyman, Windsor H., North Abington.

ANNUAL MEMBERS.

Members of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Allen, Charles L., Floral Park, N.Y.
Alles, William H., Chestnut Hill.
Anderson, George M., Milton.
Arnold, Miss Sarah L., Newton Centre.
Atkinson, Edward, Brookline.
Ayres, Miss Helen F., Medford.

Barker, John G., Melrose.
Barr, John, Wellesley.
Bigelow, Arthur J., Eastlake, Worcester.
Bigelow, Mrs. Nancy J., Southborough.
Bird, John L., Dorchester.
Blomberg, Carl, North Easton.
Bock, William A., North Cambridge.
Bolles, William P., M.D., Roxbury.
Boyden, Clarence F., Taunton.
Bradley, Miss Abby A., Hingham.
Braman, George H., Newton.
Breck, Charles H., Newton.
Brunton, Frank, Stockbridge.
Butler, Edward, Wellesley.

Carpenter, Frank O., West Roxbury.
Carter, Mrs. Sarah D. J., Wilmington.
Cary, Miss Alice B., Lexington.
Chase, Joseph S., Malden.
Chase, Philip A., Lynn.
Chubbuck, Isaac Y., Roxbury.
Clapp, Henry L., Roxbury.
Clark, John W., North Hadley.
Clark, Joseph, Manchester.
Clark, Theodore M., Newtonville.
Clinkaberry, Henry T., Trenton, N. J.
Collins, Frank S., Malden.
Comley, James, Lexington.
Coolidge, Dr. Sumner, East Watertown.
Cotter, Lawrence, Dorchester.
Cotting, Charles U., Boston.
Crosby, J. Allen, Jamaica Plain.
Curtis, Joseph H., Boston.
Curtis, Louville, Tyngsborough.

Davis, Frederick S., West Roxbury.
Dawson, Charles Jackson, Newark, N. J.
Derby, William H., Revere.
Dolbear, Mrs. Alice J., College Hill.
Dorr, George B., Boston.
Doyle, William E., East Cambridge.
Duffley, Daniel, Brookline.

Eastman, Edmund C., Brookline.
Eaton, Warren E., Reading.
Endicott, Miss Charlotte M., Canton.
Eustis, William Tracy, Brookline.
Ewell, Marshall F., Marshfield Hills.

Fenno, Warren, Revere.
Fisher, Sewell, Framingham.
Fiske, Harry E., Wollaston.

Fitzgerald, Desmond, Brookline.
Fletcher, Fred W., Auburndale.
Forbes, William H., Jamaica Plain.
Francis, George E., M.D., Worcester.
Fuller, T. Otis, Needham.

Gill, Mrs. E. M., Medford.
Gilman, Hon. Virgil C., Nashua, N. H.
Grant, Charles E., Concord.
Grew, Henry Sturgis, Boston.
Grey, Robert Melrose, North Easton.
Grey, Thomas J., Chelsea.

Hall, Charles H., M.D., Corning, Cal.
Hall, Stacy, Boston.
Hallstram, Charles W., Boston.
Ham, Fernald E., Burlington.
Hargraves, William J., Jamaica Plain.
Harris, Frederick L., Wellesley.
Harrison, C. S., York, Nebraska.
Harrison, Thomas, Melrose Highlands.
Hartwell, Samuel, Lincoln.
Hatfield, T. D., Wellesley.
Hersey, Edmund, Hingham.
Heustis, Warren H., Belmont.
Hill, J. Willard, Belmont.
Hinds, Warren D., Townsend.
Hobbs, George M., Boston.
Hollis, George, South Weymouth.
Houghton, George S., West Newton.
Howden, Thomas, Whitinsville.
Hubbard, F. Tracey, Cambridge.
Huston, Miss Katharine W., Jamaica Plain.

Illenberger, Henry, Brookline.
Ireland, Robert D., Winthrop.

James, Robert Kent, Dorchester.
Jameson, G. W., East Lexington.

Keith, Mrs. Mary R., Washington, D. C.
Kelsey, Harlan P., Boston.
Kemp, William S., Brookline.
Kennard, Frederic H., Brookline.

Lancaster, Mrs. E. M., Roxbury.
Laurie, Robert, Newport, R. I.
Lawson, Joshua, Brookline.
Lincoln, Miss Agnes W., Medford.
Lomax, George H., Somerville.
Loring, Charles G., Boston.
Loring, Mrs. Thacher, Brookline.
Loring, William C., Beverly.
Lothrop, Thornton K., Boston.
Low, Hon. Aaron, Hingham.

Manda, W. A., South Orange, N. J.
Manning, A. Chandler, Reading.
Martin, William J , Milton.
Maynard, Charles, North Easton.
McLaren, Anthony, Westwood.
Meriam, Horatio C., D.M.D., Salem.
Metcalf, Dr. Ben H., Winthrop.
Milman, William, Roxbury.
Moody, Abner J., Boston.
Morgan, George M., Boston.
Morrison, William, Cohasset.
Moseley, Frederick C., Dorchester.
Moseley, Frederick Strong, Newburyport.
Munson, Prof. W. M., Orono, Me.

Newton, John F., Roxbury.
Nicholson, William, Framingham.
Norton, Michael H., Boston.
Norton, Patrick, Dorchester.

Olmsted, Frederick Law, Brookline.

Park, William D., Boston.
Parker, John, Newtonville.
Parker, Walter S., Reading.
Patterson, William, Quincy.
Peirce, George H., Concord Junction.

Petremant, Robert, Brooklyn, N. Y.
Pettigrew, John A., Jamaica Plain.
Pickman, Dudley L., Boston.
Pierce, Mrs. F. A., Brookline.
Plimpton, Willard P., West Newton.
Pray, James Sturgis, Cambridge.
Purdie, George A., Ormond, Florida.

Rea, Charles H., Norwood.
Rea, Frederic J., Norwood.
Rich, Miss Ruth G., Dorchester.
Rich, William E. C., Roxbury.
Rich, William P., Chelsea.
Richards, Mrs. P. D., West Medford.
Robb, Peter B., Whitinsville.
Robbins, Oliver R., Weston.
Robinson, Walter A., Arlington.
Rodman, Miss Mary, Concord.
Ross, Charles W., Newtonville.
Ross, Henry Wilson, Newtonville.

Sander, Charles, Brookline.
Saunders, Miss Mary T., Salem.
Scott, Augustus E., Lexington.
Scudder, Samuel H., Cambridge.
Searles, E. F., Methuen.
Seaver, Edwin P., Waban.
Sharples, Stephen P., Cambridge.
Shaw, Hon. Edward P., Newburyport.
Shea, James B., Jamaica Plain.
Shepard Harvey N., Boston.
Sheppard, Edwin, Lowell.
Southworth, Edward, Quincy.
Squire, Miss Esther A., North Cambridge.
Stevens, Mrs. Mary L., Cambridge.
Stone, Joshua C., Watertown.
Story, Miss Sarah W., Brighton.
Strange, David T., Stoneham.
Sullivan, Michael, Revere.
Sutherland, George A., Roslindale.
Swan, Charles W., M.D., Brookline.

Tailby, Joseph, Wellesley.
Teele, William H., West Acton.
Tobey, Rufus T., Roxbury.
Tyler, Mrs. John F., North Andover.
Tyndale, Theodore H., Brookline.

Vaughan, J. C., Chicago, Ill.

Warren, Samuel H., Weston.
Welch, Patrick, Dorchester.
Westwood, Thomas H., Jamaica Plain.
Wheeler, Henry A., Newtonville.
White, Maurice P., Roxbury.
White, W. Henry, Lowell.
Whitney, Joseph, Cambridgeport.
Whiton, Hon. Starkes, Hingham Centre.
Wilder, Miss Grace S., Dorchester.
Wilder, Miss Jemima R., Dorchester.
Wilkie, Edward A., Newtonville.
Winter, William C., Mansfield.
Wolcott, Mrs. H. L. T., Dedham.
Wood, Mrs. Anna D , West Newton.
Wood, Elijah A., West Newton.
Wood, E. W., West Newton.
Woodford, Joseph H., Boston.
Woods, Henry F., Boston.

Young, E. Bentley, Boston.

Zirngiebel, Denys, Needham.

EXTRACTS FROM THE CONSTITUTION AND BY-LAWS.

SECTION XXII.

Life Members.

The payment of thirty dollars shall constitute a Life Membership, and exempt the member from all future assessments, and any Annual Member, having paid all dues, may become a Life Member by the payment of twenty dollars in addition thereto.

Annual Membership.

Every Annual Member, before he receives his diploma, or exercises the privileges of a member, shall pay the sum of ten dollars as an admission fee, and shall be subject afterwards to an annual assessment of two dollars.

SECTION XXIII.

Withdrawal or Discontinuance of Membership.

Any member may withdraw from the Society, on giving notice to the Treasurer and paying the amount due from him. Any member who shall neglect for the space of two years to pay his annual assessment, after due notice from the Treasurer, shall cease to be a member. The Treasurer shall give notice of such withdrawals, or discontinuances to the Secretary, who shall erase such members' names from the list.

The attention of Annual Members is particularly called to Section XXIII.

HONORARY MEMBERS.

Members and correspondents of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Information, or any clew to it, is especially desired in regard to Joseph Maxwell, *elected in* 1830, *and* George W. Smith, *elected in* 1851.

Hon. George S. Boutwell, Groton.

Clarence H. Clark. Ex-President of the Pennsylvania Horticultural Society, Philadelphia.

Joseph Jefferson, Buzzard's Bay.

Major L. A. Huguet-Latour, M. P., Montreal, Canada.

Sir Trevor Lawrence, President of the Royal Horticultural Society, London.

Joseph Maxwell, Rio Janeiro, Brazil.

Donald G. Mitchell, New Haven, Conn.

Hon. J. Sterling Morton, Ex-Secretary of Agriculture, Nebraska City, Neb.

Baron R. Von Osten Sacken, Heidelberg, Germany.

Samuel B. Parsons, Flushing, N. Y.

Dr. Henry S. Pritchett, President of the Massachusetts Institute of Technology, Boston.

George W. Smith, Boston.

Albert Viger, President of the National Society of Horticulture of France, Paris.

Hon. James Wilson, Secretary of Agriculture, Washington, D. C.

CORRESPONDING MEMBERS.

Members and correspondents of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly reporting to the Secretary the needed corrections.

Information, or any clew to it, is especially desired in regard to Alexander Burton, *elected in* 1829; S. Reynolds, M.D., 1832; *and* Francis Summerest (or Summerer), 1833.

ÉDOUARD ANDRÉ, Editor-in-chief of the Revue Horticole, Paris, France.

GEORGE FRANCIS ATKINSON, Professor of Botany in Cornell University, Ithaca, N. Y.

PROFESSOR L. H. BAILEY, Horticultural Department, Cornell University, Ithaca, N. Y.

JOHN GILBERT BAKER, F. R. S., F. L. S., Kew, England.

CHARLES BALTET, Président de la Société Horticole, Vigneronne, et Forestière de l' Aube, Troyes, France.

PETER BARR, London, England.

ARCHIBALD F. BARRON, Turnham Green, London, W.

NAPOLEON BAUMANN, Bolwiller, Alsace.

D. W. BEADLE, 303 Crawford St., Toronto, Ontario.

PROFESSOR WILLIAM J. BEAL, Agricultural College, Michigan.

PROSPER J. BERCKMANS, Ex-President of the American Pomological Society, Augusta, Ga.

CHARLES E. BESSEY, Ph. D., Professor of Botany in the Industrial College of the University of Nebraska, Lincoln.

DR. CH. BOLLE, Berlin, Prussia.

COL. GUSTAVUS B. BRACKETT, Pomologist to the United States Department of Agriculture, Washington, D. C.

JOHN CROUMBIE BROWN, LL.D., Haddington, Scotland.

PROFESSOR J. L. BUDD, Ames, Iowa.

WILLIAM BULL, Chelsea, England.

F. W. BURBIDGE, M.A., Trinity College Botanic Garden, Dublin, Ireland.

ALEXANDER BURTON, United States Consul at Cadiz, Spain, Philadelphia

DANIEL T. CURTIS, Dorchester.

REV. H. HONYWOOD D'OMBRAIN, Westwell Vicarage, Ashford, Kent, England.

SIR W. T. THISELTON DYER, K. C. M. G., F. R. S., Director of the Royal Botanic Gardens, Kew, England.

PARKER EARLE, President of the American Horticultural Society, Roswell, N. M.

GEORGE ELLWANGER, Rochester, N. Y.

HENRY JOHN ELWES, F. L. S., F. Z. S., Colesborn, Andoversford, Gloucestershire, England.

WILLIAM G. FARLOW, M.D., Professor of Cryptogamic Botany, Harvard University.

B. E. FERNOW, Forestry School, Cornell University, Ithaca, N. Y.

HON. ROBERT W. FURNAS, Ex-President of the Nebraska State Horticultural Society, Brownville.

BEVERLY T. GALLOWAY, Horticulturist and Superintendent of Gardens and Grounds of the United States Department of Agriculture, Washington, D.C.

CHARLES A. GOESSMANN, Ph.D., LL.D., Chemist of the Hatch Experiment Station of the Massachusetts Agricultural College, Amherst.

GEORGE L. GOODALE, M.D., Professor of Botany, Harvard University, Cambridge.

HENRY H. GOODELL, President of the Massachusetts Agricultural College, Amherst.

OBADIAH B. HADWEN, President of the Worcester County Horticultural Society, Worcester.

PROFESSOR BYRON D. HALSTED, Botanist and Horticulturist at the New Jersey Agricultural Experiment Station, New Brunswick, N. J.

PROFESSOR CARL HANSEN, of the Royal College of Agriculture, Copenhagen, Denmark.

J. H. HART, Superintendent of the Botanic Garden, Trinidad.

DR. F. M. HEXAMER, Editor of the American Agriculturist, New York.

J. W. HOFFMANN, Colored State University, Orangeburg, S. C.

J. C. HOLDING, Ex-Treasurer and Secretary of the Cape of Good Hope Agricultural Society, Cape Town, Africa.

THE VERY REV. S. REYNOLDS HOLE, D.D., Dean of Rochester, Rochester, England.

SIR JOSEPH HOOKER, K.C.S.I., The Camp, Sunningdale, England.

JOSIAH HOOPES, West Chester, Pa.

GEORGE HUSMANN, Napa, Cal.

CHARLES JOLY, Honorary Vice-President of the Société Nationale d'Horticulture de France, Paris.

SIR GEORGE KING, K. C. I. E., M. B., LL. D., F. R. S., Calcutta.

PROFESSOR WILLIAM R. LAZENBY, Department of Horticulture and Forestry; Secretary College of Agriculture and Domestic Science, Ohio State University, Columbus, O.

MAX LEICHTLIN, Baden-Baden, Germany.

VICTOR LEMOINE, Nancy, France.

DR. PETER MACOWAN, Director of the Botanic Garden, Cape Town, Africa.

DR. MAXWELL T. MASTERS, Editor of the Gardeners' Chronicle, London.

GEORGE MAW, Benthal, Kinley, Surrey, England.

T. C. MAXWELL, Geneva, N. Y.

F. W. Moore, A. L. S., Curator of the Royal Botanic Gardens, Glasnevin, Dublin, Ireland.

Dr. Daniel Morris, C.M.G., D.Sc., M.A., F.L.S , Imperial Department of Agriculture, Barbados.

George Nicholson, Kew, England.

Peter Nøvik, Secretary of the Norwegian Horticultural Society, Christiania.

William Paul, Waltham Cross, London, N.

Professor D. P. Penhallow, Director of the Botanic Garden, Montreal, Canada.

Henry Probasco, Cincinnati, Ohio.

P. T. Quinn, Newark, N. J.

Cavalière Enrico Ragusa, Palermo, Sicily.

D. Redmond, St. Nicholas, Florida.

S. Reynolds, M.D., Schenectady, N. Y.

Benjamin Lincoln Robinson, Ph.D., Curator of the Gray Herbarium of Harvard University, Cambridge.

William Robinson, Editor of Gardening Illustrated, London.

William Salway, Superintendent of Spring Grove Cemetery, Cincinnati, O.

Edgar Sanders, Chicago, Ill.

William R. Smith, Superintendent of the Botanic Garden, Washington, D. C.

Robert W. Starr, Port William, N. S.

Dr. Joseph Stayman, Leavenworth, Kan.

Francis Summerest.

William Trelease, Director of the Missouri Botanic Garden, St. Louis.

Dr. Melchior Treub, Director of the Botanic Garden, Buitenzorg, Java.

H. J. Veitch, Chelsea, England.

William Watson, Curator of Royal Gardens, Kew, England.

Professor L. Wittmack, Secretary of the Royal Prussian Horticultural Society, Berlin, Prussia.

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TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1902.

PART I.

BOSTON:
PRINTED FOR THE SOCIETY,
1902.

The following lectures have been circulated to some extent in the form of slips reprinted from the reports made by the Secretary of the Society in the "Boston Evening Transcript." As here presented, the lectures are, as far as possible, printed in full, and reports of the discussions following the lectures are added, these, where it appeared necessary, having been carefully revised by the speakers.

The Committee on Lectures and Publication take this opportunity to repeat what they have before stated, that the Society is not to be held responsible for the certainty of the statements, the correctness of the opinions, or the accuracy of the nomenclature, in the lectures and discussions now or heretofore published, all of which must rest on the credit or judgment of the respective writers or speakers, the Society undertaking only to present these papers and discussions, or the substance of them, correctly.

AARON LOW,
J. H. BOWDITCH,
E. W. WOOD,
Committee on Lectures and Publication.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, January 4, 1902.

A duly notified stated meeting of the Society was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

This being the commencement of the term of office of the new board of Officers and Standing Committees, the President delivered his annual address as follows:

Ladies and Gentlemen,

Members of the Massachusetts Horticultural Society:

It is assigned to me by your very complimentary vote at the annual meeting, and by usual custom at the first meeting of the new year, to open with a few remarks. To me it is a pleasure to perform any duty that may tend to enable the members of the Society to act in greater unity and concert, that the present and past usefulness and future welfare of the Society may continue, in its legitimate purpose, to carry forward and adhere to the original Act of Incorporation for the "purpose of encouraging and improving the science and practice of horticulture and promoting the amelioration of the various species of trees, plants, fruits, and vegetables." The Society with its long life and energies has

moved this great Commonwealth with the spirit of enterprise that we now enjoy in horticultural pursuits, and, by the addition of the great productive industry so well established, and yearly increasing, which affords sustenance and good homes to a vast number of people within this Commonwealth.

The first Saturday in January is the time fixed by the By-Laws when the newly elected officers enter upon their official duties, when the Treasurer's report of the receipts and expenditures of the Society and the Schedule of Prizes for the ensuing year are in order to be acted upon.

We are assembled here today in this new and substantial edifice, it being the third building erected by the Society for its exhibition halls and library. The Society, with its seventy-two years of active life, eminent in its calling, now approaches the most important epoch in its history. The ensuing year will demonstrate, may we hope, the success of the removal from the business portion to the residential section of the city, a change that requires very considerable adaptability and a persistent purpose to carry forward with the utmost energy the objects of the Society so fundamental to its life and prosperity. Our main object should be a strong unanimity, not only to adapt ourselves to our situation, but a determination to overcome all prejudice that may exist, and work with a will to reinstate the good old prosperous years we enjoyed in the spot that many left with feelings of deep regret. The year just closed has, therefore, been to many members one of considerable anxiety.

The completion of this building so late in the year made necessary the postponement of the summer exhibitions, but the first flower show held in this building on June 3d to 9th proved a marvel of beauty and a success, and the halls proved their complete adaptation for the exhibition of plants of very large size that no other hall could possibly accommodate; it also proved undoubtedly the most elaborate of its kind ever brought together in this country.

The second exhibition held in this building, on November 7th to 10th, when prizes were awarded for fruits, flowers and vegetables, proved a marked success; it brought out in the greatest profusion, the richest treasures of the greenhouses, gardens and orchards, and all the available room seemed to be occupied, and

the arrangement was wonderfully pleasing in every feature; it was a well deserved credit to the committee having it in charge.

Both of these exhibitions were generously patronized and appreciated by the public, and left a substantial sum above expenses incurred. These displays also demonstrated that the public will sustain large exhibitions of the Society and will also encourage and patronize the Sunday exhibitions. Is there anything more worthy than the rich treasures of the fields and gardens?

The Committee on School Gardens and Children's Herbariums in December held an exhibition in the Lecture Hall, which proved one of the best ever held under the auspices of this Society and well deserved the encouragement it received. Here much intelligence and taste was abundantly manifest in the preservation of flowers and plants, both wild and cultivated, which were perfectly arranged.

In conclusion, for I must be brief in view of the business of the meeting, permit me to remind you of your duties for the ensuing year and to urge you to use your best efforts to sustain the Society. Your Committees will recommend no reduction in the amount of premiums. We are surrounded with new conditions that none can accurately foresee; the year will be one of experiment and experience, and let us resolve that no effort shall be spared to render the exhibitions and the general prosperity of the Society superior to those of the years that have preceded us.

Ladies and Gentlemen, tendering you my thanks, in behalf of the Society, I offer the congratulations of the season.

The Executive Committee reported a recommendation that the Society make the following appropriations for the year 1902:

For Prizes and Gratuities for the year 1902,

For Plants	$2,000.00
For Flowers	2,500.00
For Fruits	1,700.00
For Vegetables	1,200.00
For Gardens	500.00
For Native Plants	175.00
Total	$8,075.00

For the Committee on School Gardens and Children's Herbariums, for Prizes	$125.00
For the same Committee for Incidental Expenses	75.00
For the Library Committee, this sum to include the income of the French and Farlow Funds	700.00
For the Committee of Arrangements, this sum to include all extraordinary expenses of said Committee	300.00
For the Committee on Forestry and Roadside Improvement	150.00
For the Committee on Lectures and Publication, this sum to include the income of $50 from the John Lewis Russell Fund	250.00
For the Salaries of the Treasurer and Superintendent of the Building, and the Secretary and Librarian	3,000.00

These appropriations are the same as for last year, and they were unanimously voted.

The Executive Committee also reported the appointment of Charles E. Richardson as Treasurer and Superintendent of the Building, and Robert Manning as Secretary and Librarian for the year 1902.

The Report of the Committee on Forestry and Roadside Improvement, and the Report of the Committee on Native Plants were read by the Secretary and severally referred to the Committee on Lectures and Publication.

(AA. *See statement, page 10.*)

The Annual Report of the Committee on Lectures and Publication was read by Hon. Aaron Low, Chairman.

On motion of Francis H. Appleton it was

Voted, That the reading of the reports of Committees be dispensed with, and that said reports be referred to the Committee on Lectures and Publication.

Patrick Norton presented his report as Chairman of the Committee on Gardens.

Joseph H. Woodford presented his report as Chairman of the Committee of Arrangements.

Henry L. Clapp presented his report as Chairman of the Committee on School Gardens and Children's Herbariums.

These reports were severally accepted and referred to the Committee on Lectures and Publication.

A motion that the report of the Building Committee, giving a detailed statement of the cost of the new building, be read, was defeated.

On motion of George D. Moore, it was

Voted, That an itemized statement of the cost of the new building be prepared by the Building Committee and sent to every member of the Society.

A printed copy of a proposed new Constitution and By-Laws was offered and read by Richard M. Saltonstall. After a second reading by Francis H. Appleton, and after it had been voted to change the word "shall" to "may" in the sixth line of Section XIII, and the words "a majority" to "two-thirds" in the next to the last line of Section XVI, the proposed Constitution and By-Laws were approved by a majority vote and ordered to be entered upon the records for consideration at the Stated Meeting on the first Saturday in April.

Vice-President Benjamin P. Ware was now called to the chair and it was, upon motion of J. Woodward Manning,

Voted, That the President of the Massachusetts Horticultural Society be a Committee of one to serve on the General Reception Committee for the Sixth Annual Meeting of the American Park and Outdoor Art Association, to be held in Boston, in August, 1902.

Voted, That $100 (one hundred dollars) be appropriated by the Massachusetts Horticultural Society toward a fund to be placed at the disposal of the General Reception Committee of the American Park and Outdoor Art Association.

In regard to the disposal of the statues of Ceres, Flora and Pomona, which had adorned the old Horticultural Hall, on Tremont Street, it was

Voted, That a committee be appointed to confer with the donors of the statues and the City of Boston in reference to their disposal by the Society. President O. B. Hadwen, William C. Strong and William H. Spooner were appointed as that Committee.

The following named persons, having been recommended by the Executive Committee for membership in the Society, were on ballot duly elected:—

FRANCIS R. BANGS, of Boston.
GEORGE E. CABOT, of Boston.
ARTHUR DEHON HILL, of Boston.
EDMUND REARDON, of Cambridgeport.

The meeting was then dissolved.

STATEMENT.

The records of the Stated Meeting, held Saturday, January 4, 1902, were not completed by Mr. Robert Manning, late Secretary of the Society, before his death, which occurred February 17th. From the line in such records marked AA they were prepared by Mr. Nathaniel T. Kidder, who was appointed Secretary *pro tem* March 1st, from memoranda left by Mr. Manning, from written copies of motions found among his papers, and from personal recollection.

MASSACHUSETTS HORTICULTURAL SOCIETY.

At a meeting of the Society on Saturday, November 2, 1901, it was voted that the Building Committee be requested to furnish a detailed statement of the cost of the new building. The following statement was received in reply to this request and at a meeting held January 4, 1902, it was voted that a copy be sent to every member of the Society.

STATEMENT OF COST OF NEW MASSACHUSETTS HORTICULTURAL SOCIETY BUILDING.

C. A. Dodge & Co.,	General Contract,	$238,219 62
John Evans & Co.,	Carving,	5,976 00
W. A. Snow & Co.,	Musician's balcony,	227 00
G. M. Angier,	Electric wiring,	2,721 22
A. A. Sanborn,	Heating and ventilating,	14,257 50
C. E. Horn,	Elevator,	445 00
Pierce & Cox,	Plumbing,	4,051 41
Murdock Parlor Grate Co.,	Bronze letters,	275 00
Vermont Marble Co.,	Marble for library,	65 00
L. M. Ham & Co.,	Sidewalk lights, etc., alley,	286 00
T. F. McGann,	Exterior iron balconies,	985 00
Bowker, Torrey & Co.,	Marble,	116 85
R. D. Ireland & Co.,	Electric light fixtures,	1,676 03
Elektron Manufacturing Co.,	Dumb waiter,	950 00
Walworth Manufacturing Co.,	Pipe,	5 79
Kearns & Co.,	Monolith floor, kitchen,	150 00
Duparquet, Huot and Moneuse Co.,	Kitchen furnishings,	555 50
R. Guastavino,	Arch over ticket office, etc.,	188 09
Enoch Robinson,	Brass rails, ticket office,	89 97
Taylor, Carr & Andrews,	Granolithic work, alley,	440 00
O. P. Hastings,	Shades,	115 47
Boston Electric Light Co.,	Service,	136 57
Metropolitan Coal Co.,	Coal,	699 84
John F. Berrigan,	Two tide valves,	201 49
Incandescent Electric Light Ma. Co.,	Manipulator for electric lights,	24 34
Thomas Parker & Co.,	Use of Salamanders,	67 75
B. F. Smith & Brother,	Testing for foundations,	302 75
Rockwell & Churchill,	Printing specifications,	49 50
Aspinwall & Lincoln,	Surveying,	35 00
W. L. Kimball,	Salary as Supt. of Construction,	2,020 50
Traveling Expenses,		437 74
Extra Blueprints for estimating,		79 49
Fireman's salary,		589 32
French & Hubbard,	Heating and elec. engineers,	904 40
Incidentals,		5 90
Wheelwright & Haven,	Architects,	13,646 32
		$290,997 36

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 11, 1902.

A meeting for Lecture and Discussion was holden * today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE BROWN-TAIL MOTH IN MASSACHUSETTS.

BY A. H. KIRKLAND, M. S., Boston.

Some of the most difficult problems in the economic entomology of the present day result from the importation of foreign insect pests. The San José scale, elm leaf beetle and gypsy moth are illustrations only too familiar. Such pests usually arrive unattended by the parasites or other natural enemies which control their increase in their native region, and in a new environment cause severe and widespread injury. The advantages offered by Massachusetts as a place of residence must be well understood by the insect fauna of other lands, for this Commonwealth certainly has received her a full quota of foreign insect visitors. To the ever lengthening list there has been added recently the brown-tail moth, a pest of the first magnitude at home. Apparently it is determined to maintain its reputation here if we are to judge by its serious depredations last summer in the Metropolitan district.

It is indeed a strange fatality that another European insect, closely related to the gypsy moth by habit and structure, should become accidentally imported into the same locality to which thirty years before a misguided scientist brought the gypsy moth. It would seem that the world is large enough to give each of these pests a separate "sphere of influence." That they were both transported across the Atlantic to the same locality by totally dissimilar agencies must stand as one of the remarkable entomological events of the century just closed. However, the pest is with us and in tremendous numbers. In five years' time it has spread from Somerville to Scituate, Brockton, Hudson and even to Kittery, Me. Knowing the habits of the moth it is fair to assume

* At Chickering Hall.

that a large part of the region lying between these points and the sea is generally infested.

The parent brown-tail moth is a beautiful, snow-white moth with a conspicuous brown tail, hence the common name. The moths expand some one and one-half inches and are on the wing throughout the month of July. They are sluggish and inactive by night and are strongly attracted by lights. That good old scientist Réaumur writes, "I have never seen the moth use them (the wings) in flight nor even try to do so," a statement which testifies to the good hours kept by this early student of insects if not to the unfailing accuracy of his observations. The eggs are neatly packed in a yellow hair-covered mass on the under surface of the leaves of pear and other food plants and hatch in about three weeks. The height of the flying and laying season falls around the 15th of July and by the first week in September the majority of the eggs have hatched.

The young larvæ feed at first on the epidermis of the leaf to which the eggs were attached, then draw down other leaves eventually covering them with a tough, silken envelop. In this way with a few leaves as a basis, the compact, silken winter webs are formed and securely attached to the twigs. The larvæ sally out by day to feed, returning to the web at nightfall, and on the approach of cold weather close the openings of the webs and hibernate in the silken chambers inside. The writer once counted the inmates of eighteen of these webs taken at random and found they contained from forty-seven to six hundred and seventy-four larvæ, with an average of two hundred and seventy-seven. Seven female moths carefully dissected contained from one hundred and forty-five to three hundred and forty-four eggs each, with an average of two hundred and fifty-one. These figures are suggestive as bearing on the possible rate of increase of the moth.

Within these silken shelters the tiny caterpillars rest secure throughout the vicissitudes of our New England winters. Réaumur noticed that they were not affected by a temperature of 11° Fh., while they passed unharmed through what Köllar euphemistically calls "the frost on the 2nd of February, 1830," when the mercury fell to 60° below zero Fh.

The return of warm weather causing the buds to swell brings forth the caterpillars with appetites in proportion to the length of

their fast. At this time these insects have a great advantage over some of our native fruit tree pests. Tent caterpillars or canker worms, for example, hatch in the spring and their growth, at least for a time, does not keep pace with the development of the foliage. The brown-tail moth larvæ, on the contrary, come forth partly grown and with the experience of weeks of foraging the previous fall. They consume buds, blossoms and leaves in turn, and where extra abundant will keep down every sign of leafage until the middle or last of June, when they spin up in masses on the sides of buildings, along fences and even in the foliage of trees. Within the cocoons the caterpillars soon change to pupæ from which in due season the moths emerge.

In Europe this insect is an old offender. It is found from southern Sweden to Algiers and from Portugal to the Himalayas, but it is from France and Germany that we obtain best accounts of its injury to orchards and forests. Thus in the early part of the sixteenth century Choirier relates that in the province of Dauphiny the caterpillars of this moth were so abundant that the attorney-general of the Province found it necessary to issue an injunction against them and ordered them to evacuate the fields. Again in 1543 a member of the city council of Grenoble introduced a resolve begging the local church official "to excommunicate these pests and censure them, in order to check the damage they were doing daily." The council promptly enacted the resolve.

Jean Goedart, writing in 1700, describes the "singular nature" and "remarkable knowledge and foresight" of the caterpillars. Réaumur, traveling from Tours to Paris in 1731, "found every oak in possession" of these insects.

In London and vicinity in 1782 damage by this insect was so severe as to terrorize the inhabitants; and in the language of Donovan "it was naturally interpreted as a visitation from Heaven ordained . . . . . to deprive men and cattle of their most essential food and leave them a prey to famine." Public prayers for relief were offered in the churches, while the municipal authorities, evidently believing that works go well with faith, gave a shilling per bushel for the caterpillar webs. At Clapham in a single day eighty bushels of webs were thus collected and burned.

In 1796 injury by this insect had become so great in France that a law was enacted by the French parliament compelling prop-

erty owners to cut off and burn the webs, the penalty for neglect being from three to ten days' imprisonment.

In 1829 M. Wallner found the caterpillars of the brown-tail moth causing severe damage throughout Bohemia, Austria, Bavaria and Switzerland. Ratzeburg states that in the late fifties the brown-tail moth ravaged the oaks in the streets of Potsdam and even killed some of them.

Altum records a local outbreak at Eberswald in 1874 when fruit trees were stripped, while as late as 1897 an anonymous writer in Gartenflora says "the larvæ of the brown-tail moth have entirely stripped the oaks and many bushes in the Tiergarten" at Berlin.

These records taken at random from European entomological works, the majority of which are in the library of this Society and to which I have been allowed free access, give sufficient evidence of the insect's capacity for harm. Lacking most of its natural enemies it is possible that here it may prove even more injurious than in the Old World.

In May, 1897, several Somerville, Mass., property owners found an annoying caterpillar plague on their pear trees, and reported the same to the Gypsy Moth Committee. Upon the indentification of the insects by Prof. C. H. Fernald the writer endeavored to discover how they had been imported. He found the depredations of the moth to centre around a Somerville florist's establishment where for many years, previous to about 1890, large quantities of roses had been imported from Holland and France. We know that this insect is a common pest in those countries. From observation, as well as from the testimony of Donovan, Salisbury, Boisduval, Senoner and others, we know that this insect feeds and spins upon the rose. Therefore, there is the strongest kind of circumstantial evidence that the insect was accidentally brought to Somerville on imported rose bushes.

The 1897 outbreak of the brown-tail moth will be long remembered by many Somerville citizens. Although a local affair involving only a few acres, it occurred in a densely populated section and hence assumed much importance. Pear and other fruit trees were completely stripped while a few shade trees were much injured. In 1898 and 1899 the control of the moth was attempted by the Gypsy Moth Committee as a result of legislative action and in those years but little damage was done by the insect. After

the state work against the moth had ceased in 1900, a large natural increase in numbers developed, and last year the ravages of the moth were notably severe throughout the Metropolitan district. Fruit trees were the chief sufferers, but shade trees were also quickly defoliated. In Allston and Brighton the damage was particularly severe, and as a result citizens of those districts petitioned the Boston Board of Health for a public hearing on the subject. The chief cause for this action was not, however, the caterpillars' injury to the trees, but rather the intense and truly terrible nettling which occurred whenever the insects came in contact with human flesh. This irritation in its worst form beggars description, as the writer can testify from personal experience. It has caused several cases of severe illness among children and aged people. So far as we have been able to determine, the irritation is a mechanical one, caused by the breaking up in the skin of the fine, brittle, barbed caterpillar hairs. It is not dependent upon the live insects because hairs from cocoons nettle as badly as those from living caterpillars, and after the cocoons are formed a person may become seriously affected by passing through a badly infested locality, the loose hairs apparently being blown about by the wind. European authorities do not discuss this matter to any great extent, apparently considering it as a well-known phenomenon. Köllar says that the caterpillars "should be taken hold of with great caution," while Fischer advises protecting the hands when engaged in the work of caterpillar destruction.

The present abundance of this insect throughout the Metropolitan district is a matter of grave importance. In Somerville, Cambridge, Arlington, Medford, Malden, Lynn and elsewhere there are enough hibernating brown-tail moths to cause widespread damage and affliction next summer. The noted pear orchards of Revere are thoroughly infested. There are so many webs in certain Belmont apple orchards that one might well believe that for some mysterious reason a part of the foliage did not fall last autumn, but remained dead upon the trees. There is hardly a pear tree within a five mile radius of Somerville but that is generally infested, while street elms, maples and willows all bear the webs of the hibernating insects. While the alarmist or pessimist may be unpopular, the writer holds that there are good grounds in this case for believing that we shall witness a most serious outbreak of

this insect next summer unless far reaching remedial measures are adopted.

If this insect confined itself to one or two species of trees its damage would be reduced and its spread limited. While the elm beetle or the tent caterpillar will not thrive in an oak forest, the brown-tail moth readily adapts itself to a wide range of food plants. Aside from fruit trees, European authorities lay particular stress on its injuries to oaks and elms. With us the pear ranks as the chosen food plant, with the apple a close second. Plum, cherry, quince and rose are well relished, while the white oak, swamp white oak, elm, silver maple, rock maple and wild cherry are among the trees frequented by the moth. This list shows that the distribution of the moth in this country will not be checked by lack of suitable food.

Since the female moth flies freely, we should look for a gradual extension of the infested area, and the writer believes it will be a matter of only a few decades before this pernicious insect will be found throughout New England. Aside from the migration of the mature insects, the caterpillars often travel three hundred or more feet in search of food. In their earlier stages they drop on teams and are thus transported from place to place. The principal spreading, however, takes place in the moth state and it is apparent that these insects sometimes fly several miles. Being strongly attracted to light, they are most abundant in the centres of towns, localities where street lights are most abundant. Multitudes of the moths are destroyed by arc lights. The writer has taken nearly two quarts of these moths from the globe of an arc light, while underneath such lamps in early morning the ground is often white with their bodies. All night long under these lamps sit toads ready to snap up the fluttering insects that fall partly stunned from the lights above. Of the moths killed by four lamps at the height of the flying season in 1897, thirty-five per cent were females that had not deposited their eggs.

The moth also has enemies of its own order in the shape of parasitic insects which sting the larvæ and pupæ. One minute parasite, *Diglochis omnivorus* Walk., is especially beneficial and destroys large numbers of pupæ. This parasite is of European origin and probably is the most important natural enemy of the brown-tail moth in this country.

Early in the spring predaceous bugs of the genus *Podisus* swarm to the caterpillar webs and destroy large numbers of the insects as they feed.

Wasps carry off a few of the small caterpillars, while the oriole and cuckoo devour them at times. We are obliged to credit the English sparrow with the destruction of large numbers of the mature moths. These birds search fences, house walls and trees in pursuit of the moths and feed eagerly upon them.

The combined efforts of these natural enemies as yet have not been sufficient to reduce the increase of the moth, and where the insect is abundant relief can be obtained only by the thorough application of preventive or remedial measures. Of these the destruction of the webs in the winter is the preventive *par excellence*. For five months of the year the caterpillars are assembled within their conspicuous webs at the tips of the twigs which may be cut off and burned with a minimum of effort and expense. So simple and effective is this preventive work that in France, as already pointed out, it is made obligatory on all owners or tenants of estates.

The implements needed are a ladder and a Waters' pruner or other long-handled pruning device. Thus equipped an active man can easily cut off and burn a large number of webs in a day. It is important that every web should be burned for the writer's investigations show that upward of ten per cent of the larvæ emerge from webs lying on the ground through the winter. In the winter of 1899–1900 the gypsy moth employees destroyed nearly one million of these webs on fruit and shade trees at an average cost of about one cent each. Where fruit trees only are treated the cost would be much less. Experience shows that to free a locality from the caterpillars all webs within a distance of three hundred feet should be destroyed. This indicates the great advantage and need of coöperation among owners of infested estates for it will profit the individual but little to clear his trees if this operation is neglected by his neighbors.

In spite of the fact that this insect is easily controlled by a little winter work, a large part of our citizens neglect it and these are the ones who fill the newspapers with lamentations deep and fervent about the middle or last of May. Where one has been so negligent as to allow the insects to commence feeding in the

spring, the proper course is to spray the trees at once with arsenate of lead. This insecticide is preferred to Paris green because it kills quickly, sticks to the leaves throughout the season and does not injure the most delicate foliage. If purchased in paste form it should be applied at the rate of three pounds to fifty gallons of water. If it is desired to make it from the ingredients there will be required:

1.2 lbs. nitrate of lead,
.5 " arsenate of soda 96 per cent pure.

Each ingredient should be carefully weighed and dissolved in water in a wooden or fibre pail. The two solutions should be mixed, when one pound actual arsenate of lead will be formed. This charge is equal to nearly two pounds of the paste arsenate of lead and is sufficient for thirty-five gallons of water.

In spraying, a fine nozzle should be used and work commenced at the top of the tree. If the poison once becomes dried upon the leaves it will keep the tree free from further damage by the caterpillars.

If this early spraying has been neglected and the caterpillars become nearly full-grown before their ravages assume importance, the infested trees should be carefully banded with raupenleim, bodlime, tar, ink or other sticky substances. The insects should then be jarred or poled from the trees and at once sprayed on the ground with strong kerosene emulsion. This emulsion will kill all caterpillars with which it comes in contact while the sticky bands will prevent the caterpillars ascending the trees. To make the emulsion there will be required:

¼ lb. hard soap cut fine,
2 qts. boiling water,
1 gal. kerosene oil.

The soap should be dissolved in the water and the oil added, the whole being stirred or churned until cool. The emulsion may be well mixed by pouring it from one pail to another, letting it fall with force. For ordinary purposes it is diluted at the rate of one part to nine of water, but to destroy the brown-tail moth larvæ one part to six of water will be necessary.

Some European authors recommend the collection and destruction of the cocoons and egg masses, but these measures hardly seem advisable to the writer. The cocoons shelter innumerable

parasites whose work is of great assistance. Thus over forty of the little *Diglochis* parasites have been found in a single brown-tail moth pupa. These beneficial insects emerge from the early formed pupæ in season to attack the later caterpillars or pupæ. Farther, the cocoons cannot be handled without danger from the irritating hairs. The destruction of the egg clusters is a most arduous undertaking and one that cannot be done completely. Winter work will be necessary to clear the webs from the tops of trees where egg-clusters cannot be detected from the ground.

The feeding of the caterpillars in the fall often assumes great importance. Last year at Allston pear trees stripped in May were again defoliated in September by these insects. Since the arsenate of lead adheres so well to the foliage, trees well sprayed with it in early summer will be largely protected from the fall brood. Otherwise fall spraying is advisable, using the insecticide as recommended for the spring application.

Systematic work over large areas is necessary if this pest is to be controlled. That such a result is possible is shown by the success attending the work carried out by the Gypsy Moth Committee during the years 1898–99 when damage by the brown-tail moth was kept at a minimum. How to best deal with it now is a problem agitating many cities and towns. Municipal control seems to offer the greatest promise of success at present. A coöperative effort of all property owners cannot be obtained. Individual work is desultory and seldom thorough. The municipality has the organization and the machinery by which the work of web destruction can be thoroughly and systematically accomplished. That the moth is a pest, even a public nuisance and a menace to health cannot be doubted. Its injuries to property and persons constitute a direct tax upon the community. Why should not the municipality take charge of the work of destroying it, meeting the expense from the public treasury? It would seem that if a pest of this kind is repressed and kept confined to one part of a municipality, all the property owners benefit thereby and can well afford to pay a slightly increased tax as a premium for immunity from loss.

This problem soon will be one of the live questions of the day in this State. In the meantime we can at least keep our own trees clear from the moth, help our neighbors by information and

advice, and aid every promising endeavor to secure a thorough control of this imported pest.

We may well accept the quaint counsel of Salisbury who, studying the habits of this beautiful yet pernicious insect nearly a century ago, wrote:—

"We must observe that whilst we read in nature's book, every page affords instruction; . . . . and as men are rational beings we should always bear in view the determination as expressed, 'By the sweat of thy brow,' etc. And should know that it is expected of us to curtail the superfluities of nature's works and render those things committed to our care as perfect as our intellect and industry will admit."

Discussion.

Varnum Frost said that farmers kill everything that comes along with Paris green, and asked if that would not do for the brown-tail moth.

Prof. Kirkland replied that it would but it is apt to burn the foliage.

Michael Sullivan asked why the brown-tail moth is more numerous on the pear than the apple.

The lecturer said that we find more elm leaf beetles on English than on American elms and the potato beetle is more numerous on the potato than on the tomato and egg plant; it s the adaptation of insect to food plant.

Thomas Harrison asked if the English sparrow should not be protected, and Prof. Kirkland said not necessarily, for the few moths he kills will not atone for his many other sins.

Prof. L. O. Howard said he was extremely interested in the lecture. He had been horrified to find masses of the larvæ and thought we have a serious problem before us.

Mrs. E. M. Gill told about using the Waters' pruner and cutting off the infested branches.

The lecturer said the importance of destroying the moth should be emphasi ed by the press. There should be a law to compel municipalities to keep street trees clean. The Common and Public Garden are free from the brown-tail moth but the elm beetle is coming and the trees will have to be sprayed.

Mr. Sullivan said that the tree wardens have authority in regard

to streets, etc., but the problem is what to do with individuals. The market gardeners combatted the gypsy moth appropriation because it provided only for one insect; their idea was to make it general. He thought that a way can be found to protect unimproved lands. Much money has been expended with but little result. He believed that the views of the opponents of the gypsy moth work will change in regard to caterpillars, canker worms and, indeed, all insects.

Mr. Frost said that lice do the most harm. They are the smallest of all. He opposed the gypsy moth appropriation. What can you ever get done by a Commission? The State Board of Agriculture can be trusted.

Hon. Aaron Low, Chairman of the Committee on Lectures, announced that the abstract slips of the lecture would be ready for distribution at the lecture next week, when he hoped for a larger audience.

Thomas Harrison moved a vote of thanks for the interesting and instructive lecture, which was unanimously passed.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 18, 1902.

A meeting for Lecture and Discussion was holden * today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered.

HORTICULTURAL POSSIBILITIES FOR NEW ENGLAND FARMS.

BY PROFESSOR F. WM. RANE, NEW HAMPSHIRE COLLEGE, DEPARTMENT OF HORTICULTURE AND FORESTRY, DURHAM, N. H.

When we scan the whole field of our six states and allow ourselves to comprehend their combined length and breadth of area, hills and dales, mountain tops and seashores, forests and tillable lands, rivers and ravines, how we well up with pride and reverence for our old New England.

* At Chickering Hall.

I am to talk to you today about the possibilities for horticulture on our New England farms. When I speak of the New England farm you will doubtless think the term so broad in its application as to be meaningless. The Connecticut farm and that in Maine, for example, are perhaps altogether dissimilar, and for that matter any two farms in different sections of the same state have many points of difference. By the New England farm, after all, the average New Englander comprehends very well what is meant.

The average New England farm is not looked upon generally as offering the inducements for a successful vocation that it should. There are many reasons given for this state of affairs which I cannot discuss at length at this time. The thing that interests us most today is how to improve upon our present conditions generally in our rural sections, or in other words, how are we to improve New England farming so that, as time goes on, it will be demonstrated that the trend is not to the cities but that the New England farm offers equal inducements. The signs of the times are we believe wholesome, as what is being done in the way of education through our agricultural colleges, experiment stations, the grange, the agricultural press, farmers' institutes etc., will bring ultimate results. No one can farm haphazardly, in the old fashioned go-as-you-please way, and expect to compete as a business with other professions. Even in other pursuits as in manufacturing it is the modernly equipped machine that is found to be most economical, and those who stick to the old fashioned kinds drop by the wayside. I don't mean to be understood to place farming upon such a high basis that but few can successfully attain to it, but to emphasize that the New England farm must receive that attention and handling which modern methods suggest for expected success. We do not expect a man who knows nothing of the theory or practice of engineering to succeed as one who has shown that interest; none the less can we expect a person to become a good farmer unless he has the natural instincts of success or acquires them through perseverance.

The backbone of any nation, generally speaking, is its agriculture. Go where you will and you will find this statement to be true. Where a nation has neglected its agriculture and has not kept abreast of the times it is traveling toward destruction and

decay. The more we study the rise and fall of the Roman empire or the history of any of the older nations, the more easily we recognize these facts. Look, for instance, at the ruins of the great irrigation canals of the old world, especially those of Italy and Spain. These designate better times, a fruitful and bounteous harvest, green fields, and a land filled with a prosperous and highly-civilized people. The agriculture having since been neglected, however, it is needless to ask for the results.

To show that agriculture is of the greatest importance to a country, we need only to cite instances such as our great states of Ohio and Colorado, the one noted for its boundless coal and oil fields and the other for its vast resources of mineral wealth. We then realize that these great and valuable productions, for which these states get their reputation, do not begin to amount to their yearly agricultural resources. Take agriculture out of a country and what is left? A rocky, barren country; valuable minerals may abound, but even then, what kind of a civilization? Every one knows.

But what has this to do with horticulture and the importance of it to the New England farmer? Agriculture includes horticulture in the broad sense, and still further, a high degree of agriculture must be attained before horticulture can exist, which, in a way, is a more concentrated form of the same.

Horticulture, to my mind, is the cream of agriculture. In a comparatively new country like ours, it is perfectly natural that general agriculture should first prevail and horticulture come in when the country has been more fully opened, and an æsthetic taste established.

Horticulture is distinguished from agriculture in that it comprises the following branches: (1) Pomology, or fruit growing; (2) Olericulture, or vegetable gardening; (3) Floriculture, or the raising of flowers; and (4) Landscape Horticulture, which approaches landscape gardening. These are the subjects that come under my jurisdiction as professor of horticulture in the New Hampshire College at Durham, New Hampshire. We devote at least an entire term to each subject. The four year students of course get much more.

When pomology is taken up, the subject is divided into three main divisions: (a) viticulture; (b) orchard fruits; and (c)

small fruits. The grape being the first fruit to study is taken up in the following order: history; methods of propagation; soils and location; fertilizers; planting; culture; pruning and training; extent and importance of the business in New Hampshire, United States, and throughout the world; varieties; insect enemies; fungous diseases; remedies; harvesting; marketing etc. By the time the following subjects have been finished, viz.: the apple, pear, quince, plum, peach, cherry, apricot, nectarine, all of the tropic fruits, the various kinds of nuts, not to say anything about the small fruits, as raspberries, blackberries, currants, gooseberries, strawberries, cranberries etc., a person ought to have some sort of an idea of the scope of pomology. Similarly, I might take up the ten classes of vegetables and show the scope of olericulture or equally that of floriculture and landscape horticulture, leaving out entirely the question of greenhouse construction and management, the wholesale seed and nursery businesses, and such important studies as the evolution of plants, plant breeding etc.

We cannot help but recognize, therefore, that horticulture extends over a broad field and contains much in its grasp, doing much for a nation's welfare and happiness. Too many people think horticulture is simply fruit growing; especially is this true where fruit raising is the predominating industry; others recognize only vegetable gardening as the more important horticultural operation, while the florist doubtless thinks all others are comparatively insignificant as compared with his business, where Latin names and so many of them abound. There are whole armies of men throughout our country interested in one or more of these various pursuits, and, too, generally speaking, they are of a class above the average in intelligence and, in fact, comprise our best citizens. There is something about horticultural industries that calls out the better instincts of man, due perhaps to his closer study into the great heart of nature herself. Horticulture must be considered as refining and elevating. Fruits, flowers and landscape were never intended for association with mean or ill-tempered persons. It has been said that plants and flowers are all right for women and children to fuss with, but are belittling for men. Pity on that man who cannot see beauty and

even pleasure in a well-kept house surrounded with beautiful flowers and all of the luxuries that come with farm life.

The first point I, therefore, wish to emphasize is, that horticulture for New England farmers will more than return the interest upon the investment in pleasant homes and happier lives. There is very little trouble when passing through the state to determine which homes present cheer and welcome. When on a drive with the state entomologist of West Virginia, we found ourselves at some distance from any town where we could get dinner, and we resolved to stop at the first farmhouse that looked inviting. Although we were in a fairly prosperous section we drove for a full half hour before finding a home that met these conditions. This place had a garden; the grounds were well kept for a comfortable farmhouse, and we found our judgment was not misplaced. Not only were we able to get a good dinner, but found people whom we remember as friends. Another farmhouse in the same state, which I wish to contrast with the above, is one with a single peach tree which yielded two bushels per year it is said, and the family never sample the fruit because it has such ready sale on the market. This tree was ten years old when last I knew it, and I doubt if it has ever occurred to the farmer that more would be profitable. I don't believe this is an exaggeration over what can be found on many New England farms today. If there is any class of people deserving of fruits, and plenty of them, it is the farmer and his family, and who can have them more easily?

All lines of horticulture are found in our New England States today. When we are asked to what extent these various industries are followed, however, it seems to me this question is not and can not be answered enthusiastically. True there are exceptions but from observation I believe that we drop very far short of our possibilities. When our men of apparent horticultural interests are indifferent and pay little attention to modern methods or care little for exhibits, meetings etc., wherein much good might be gained to the benefit of all, what can we expect from others?

Were our markets far distant and competition close as in many sections of the West, doubtless conditions would bring out our keener business methods, but is this any reason why we should

be any the less careful about our opportunities? I can see little reason for the existence and great good of strong meetings in one section less favorably located, while in others with great natural advantages comparatively so little interest is taken.

During the past few years work at the experiment stations has, we believe, awakened more or less interest, but much of the time has been spent in finding out to what an extent the horticultural interests really prevail in various sections.

The possibilities in horticulture for New England farmers I believe are almost unbounded.

Were our people aroused to the interests of horticulture and would they devote an equal amount of attention to studying out the problems in horticulture as they have in dairying, I predict that for the time and money invested the results would be even more profitable. To demonstrate, I ask our agriculturist how much is made per cow per year, over and above cost of feed, shelter and labor, and I am told that, on the average for the country, nothing is made, as it is estimated that a cow must produce 3,000 pounds of milk to meet her expenses alone. Whatever is produced, in other words, over and above this amount, therefore, may be considered as profit. I do not care to go into the discussion of the dairy problems, nor throw any cold water on the enthusiasm along this line of agricultural progress in which New England deservedly ranks well at the top, but to emphasize further by comparison for the benefit of horticulture. I ask if a good thrifty Baldwin apple tree does not bring in as much profit as a cow. I doubt if I could get many in this audience to exchange a cow for an apple tree, but if figures be true, and the one under comparative conditions is as profitable as the other, I say, give me the apple tree. I am sure that while getting up at four o'clock in the morning, or tending cattle all winter is not a hardship to a man who is used to it, nevertheless most people would prefer going to work at seven o'clock. On the other hand an apple tree amounts to comparatively little, if it receives no care. With a little care, however, what a liberal response! After a Pomona Grange, attended a few weeks since, various farmers said that had it not been for their apple crops from time to time, they could not have kept out of debt. Upon inquiry, however, I found, as is generally the case, their orchards were but indifferently

cared for. Another man at this same meeting informed me that his young orchard which he set in 1891, and had given good care, yielded twenty-five barrels of fine fruit in 1899.

When I was out with the State Board of Agriculture attending farmers' institutes in the fall of 1896, the season of our over abundant apple crop, the subject given me to talk upon was "orcharding" and each time when introduced a contemptuous smile was easily detected throughout the audience. Through my discourse at that time I endeavored to overcome the mistaken idea that because that season was an off year with its over abundant apple crop, it was no reason why in years to come, the crop would not justify itself. It is only by looking at a business like that of apple growing, for a period of years, rather than a single one, that we get an idea as regards fruit growing. I remember making the prediction at that time, that a period of low prices might result in a benefit to the industry, for larger export trade was made that year than ever before and, as well, an undoubted increase in home consumption. This tends to strengthen the demand for future crops. It is needless for me to ask if these predictions have come true. In 1898 we sold from our old trees at the college alone five hundred dollars' worth of apples, and these trees are far past their prime of life. The season of 1899 we secured about an eighth of a crop which brought good prices. In 1900 we again sold a large crop of fine fruit at good prices and the past season our crop was light.

I mention our own experience because it represents fairly well the remainder of the state. Many instances have come to my notice where in the year of over-production, a few people in various sections cut down their apple trees on account of their great discouragement. Is it necessary for me to repeat the old saying "not all fools are dead yet"?

Apple growing is an industry full of the greatest of possibilities, well worthy of more attention by the New England farmer. What has been a greater blessing to western New York than her great apple orchards? I was surprised when for the first time I visited some of the farms about Rochester, in that state, and found farmers whose main livelihood came from the apple orchard. Only recently when traveling West, I by chance met a large apple buyer and cold storage man. Among other things he said that

although Missouri and Arkansas can boast of their mammoth apple orchards, nevertheless four counties in New York govern the trade of the world.

The New England states are equally as well adapted to the growing of the apple as New York, and not only do I wonder why more apple orchards are not set, but as well, how it happens that capitalists do not invade our states and take away our so-called birthright. I have heard of agitations in the latter direction only during the present year. While I am enthusiastic in fruit growing, I should far rather see a strong and healthy internal growth in our state, in which the general New England home is the gainer, rather than a monopoly. When at Chester, N. H., a few years ago I had pointed out to me orchard after orchard, which were the results of the efforts of one man during the past generation. His work has resulted in this section taking preëminence in the state as an apple section. These trees are on the decline, however, at present, and unless they are replaced with new plantations it is but a matter of time when this industry has passed here. To a person who has lived for the greater part of his life in the West to come into New England and see the neglect, especially of fruit trees, which offer so encouraging returns, it is hard to understand. After living here for the past six and one-half years, and having more or less of an opportunity to visit the various sections I have become more and more convinced that for general horticulture, and especially apple growing, there are no states in the Union that offer greater inducements than the New England states. Had I the time and means nothing would daunt me from starting an apple orchard of my own; and were I a farmer, much less would I hesitate enlarging my area in orchards. It is a fact that apple trees do not come into bearing immediately and simply setting the trees in the ground never to be looked after, other than in an indifferent way, will not bring results. This sort of negligence in fact never brings results in anything. The old saying, "a laborer is worthy of his hire," is too true, and a man usually gets pay in this world in so far as he has backbone and energy to accomplish something. I often feel after talking at a meeting of this kind, that I am too enthusiastic as I ever fear lest some person may glean only that portion of my talk that will give him enough enthusiasm to set out

some fruit and then, "cool off," leaving the poor trees to linger and die. It is the man who comprehends the whole situation from beginning to end, and who begins with system and method, that succeeds. This is the kind of men we want to enlist in our fruit raising in New England. I am acquainted with a prominent actor who had amassed a large fortune, and becoming infatuated with a certain inland watering place while touring there in summer, finally concluded to purchase a farm facing the lake and upon this to devote his summer vacations. He sent for catalogues, far and near, and resolved to make his farm a paradise. Seeds, fruits, and vines of all descriptions came pouring in by freight, express, and mail, and all hands were put at work, the actor among them, to set them out.

It is needless for me to say the outcome could have been easily foretold. It was not until some two or three years had elapsed that the proprietor awoke to a realization of what such a thing means. The farm has been sold, the actor no more enjoys his former pleasure, at this particular place; and furthermore, this instance has been a drawback in many respects in that section. People say what is the use of going into fruit raising, and point this instance as an example. I mention this to show that a person should comprehend and understand his business, whether it be horticulture (fruit growing) or otherwise. We may have plenty of literature on the subject also, and even then these mistakes like the one alluded to can be made. Literature is of little account unless it is read and digested. I was at a grange meeting and talked upon the strawberry; one of my attentive listeners asked several questions, and finally asked why the experiment station did not print and send out such information. I answered that such had been done in this very instance. Upon further investigation I found this person's name upon our mailing list, thus demonstrating that this very information was already available in his own household.

Examples like this convince me that discussions at our granges, institutes and meetings of this sort are necessary. Many listen who will not read.

As to other fruits than the apple in New England, while perhaps they cannot be recommended for so general a crop for all

farmers, nevertheless, they should be given due consideration and have their place on our farms.

General horticulture upon the farm must commonly be considered of second importance. In order to get any results there must be a definiteness of purpose. What to grow will depend upon a person's tastes and likings. One person will make a success with one thing and another with another, but there is something in all lines for the business person.

Horticulture and agriculture many times go together, and the two make a success where either alone might fail. Each person must necessarily study out his own best conditions. Dairying and gardening go well together; where it is necessary to peddle milk the same wagon will carry the vegetables to market. Other combinations can be made as gardening and pig raising, chickens and plums, and general farming with orcharding.

To make a success in anything, I care not what it is, a person must have a comprehensive idea of it. With this well understood the subject before us, "Horticultural possibilities for New England farms," may be considered under the following heads:—

1. Definiteness of purpose.
2. Basis of estimation.
3. Knowledge of modern culture.
4. Study of marketable varieties.
5. Executive ability in marketing.

As farmers we should have a definiteness of purpose which shows itself in our system of rotations, adaptable crops, etc.

With up to date methods of farming I am sure horticulture will appeal to us in some of its various forms, and it is only those of us who attain to this degree of proficiency that will make much success. A poor farmer will rarely make a successful horticulturist. Horticulture is more intensive than general farming, and to my mind is the cream of agriculture. It may be that horticulture will remain of secondary importance, as it is today on our farms, for some time, but the thing of utmost importance is that whatever is attempted should be with definiteness in view. If, in spite of our neglectful methods, fruit growing brings the most profitable crops found on many farms today, what, I ask, can we make of it if given more definite consideration? With a wholesome public sentiment in favor even of apple-growing, to say

nothing about the innumerable other horticultural crops, New England can be made a country unsurpassed.

We can say without hesitation that the apple crop is a sure paying crop everywhere in New England. Of course different sections differ more or less locally as to soil, exposure, etc., but by studying the existing conditions the problem can be easily solved. With the rapid development or evolution of American fruits there are varieties adapted to all conditions of soils and climates. With the introduction of Russian blood we have varieties of apples and cherries that withstand even the severe winters of northern Vermont, New Hampshire and Maine. Already we find such varieties of apples as the Bethel, Arctic, Oldenburg, Mackintosh, Wealthy, Pewaukee, Wagener, Scott's Winter, St. Lawrence, etc., coming from these sections in wholesome competition. This is indicative of what can be accomplished when men set about it to overcome obstacles. I attended a local fair at Bethlehem, in the midst of the White Mountains, a few years ago and to my utter surprise found that the horticultural displays of not only flowers and vegetables were fine, but their fruit represented as many varieties and exceeded in display, anything that I saw that season. I was informed that the Baldwins were grown in a protected place, but the other fruits simply received the ordinary care customary in that climate. When such a display can be grown in the heart of the White Mountains, we need not complain of our conditions elsewhere. One man is reported as growing a few acres of strawberries that year, and selling the product at an average price of twelve and a half cents a cup which is equivalent to a pint. Surely strawberries are hardy everywhere and it only demonstrates what the possibilities are in cold climates with this crop. Mr. Howe of Lancaster, New Hampshire, is a large apple grower in that region and says the Bethel apple is to that section what the Baldwin is to southern New England. When I was on a lecture trip with the Maine State Board of Agriculture last summer, I found that the Arctic apple is being very largely planted in the north-eastern part of the state. I was surprised also to find, when on this trip, a gardener at some distance north of Bangor growing and shipping all kinds of small fruits for the Boston market. I might go on further to demonstrate that even in our colder sections of New England the possibilities

for successful horticulture are even greater than is generally supposed. Here as elsewhere the man at the helm in the larger half of success.

For central and southern New England little need be said upon what we can grow here, before such an intelligent audience as always forms the constituency of the Massachusetts Horticultural Society. This Society has listened to such men as Hale of Connecticut on the peach, and others equally experienced and successful with other horticultural crops. The results of such men assure us of the success of the specialist; now with a definiteness of purpose and an understanding of their culture these products can be raised equally successfully in a limited way on the average New England farm.

(2) Can we estimate with any degree of accuracy what can be expected in the various pursuits on the New England farm? This is a question well worthy of our consideration. I thoroughly believe it is our duty and privilege to estimate and figure out our chances for success or failure in all farming undertakings. No one should undertake a business who has not the possibilities at least for what he seeks. To demonstrate, we hear so much today about farming not paying from men who are already engaged in it. I have taken occasion to examine into many individual cases of this kind and find the conditions for success are impossibilities to begin with. One man whom I know has a one hundred acre New England farm, two-thirds of which is forest or natural pasturage, so called; the remainder has been under cultivation at some time or other, but nine acres are all that he tills each year. Now the forest land furnishes him his fuel and not much more under his method of management; the meadow his hay, which about compensates for the labor in harvesting it, while the nine acres under cultivation must produce his salary. He raises an acre or two of potatoes and the remainder, with the exception of a small farm garden, is devoted to ensilage corn. He makes milk for retail trade, carrying about ten cows, has a span of horses and thinks he needs a cheap hired hand. This man is staring providence in the face and attempting an impossibility when he courts success under his conditions. His taxes, horse and cattle foods, hired labor, depreciation in buildings and tools, etc., amount to more than his income. He ought to know that he is attempting

an impossibility, and finding fault will never overcome his conditions; think of it, only nine acres, which if it produced maximum crops each year would not give him cash net returns of over $30.00 an acre for the crops he is raising, or $270 possible income for the year.

If a man expects to make a success he must form some idea of his real worth, and what he ought to make as a salary for his own satisfaction; then study out what he must do in the way of farming to accomplish the desired results. If I consider myself only a $300 man and I am growing hay for market, if my land is in good heart and I can produce an annual yield of three tons per acre and this sells at say $15 a ton, it will take only ten acres to satisfy my demands, allowing one ton per acre for expense in harvesting. If I will not be contented with less than $1000 or $2500 a year I must greatly enlarge my base of operation.

Here again is where horticulture comes to the New England farmer's assistance if he courts it. If the nine acre man had devoted his attention to some horticultural crops, such as an acre or so of currants or combination of any of the following crops as raspberries, onions, squashes, cabbage, tomatoes, celery, cucumbers, gooseberries, strawberries, peas, sweet corn, etc., or orchard fruits, if well taken care of, his chances for success would be possible.

I know of one man in New Hampshire who netted $285 on currants from one acre four years after the plants were set. An acre of currant bushes set four by five feet takes two thousand one hundred and seventy-eight plants.

Mr. Crawford of Ohio has raised seven thousand quarts of strawberries on a single acre. You and I ought to raise one-half that amount or three thousand five hundred quarts which at ten cents equals $350.

Muskmelons in hills five by six feet make one thousand four hundred and fifty-two hills to the acre, and the small Netted Gem kinds will average ten or more to the hill under good culture or fourteen thousand five hundred and twenty melons, which at four cents apiece would bring $580.

Sweet corn planted three feet by nine inches allows nineteen thousand three hundred and sixty stalks to the acre or one thou-

sand six hundred and thirteen dozen, and if sold at eight cents per dozen gives $129 per acre.

Six hundred bushels of onions per acre is not an unusual yield, and the average price for them is generally good. I know of one man whose success with onions has been the means of awakening the interest of many others, and resulting indirectly in the whole community becoming prosperous. Another New England man of my acquaintance has averaged more upon a very small area of land, the main crop of which is onions, than any general farmer about him whose invested capital is from ten to fifty times as great.

Squashes, although they have been hard to raise during the past year, nevertheless offer good returns. The sale for scalloped and crooknecks is usually limited, but the early marrows and later sorts give reliable returns.

Celery is a crop that if well grown, and the culture is simple, usually pays well. An acre of celery set in rows three feet apart and six inches in the row will contain twenty-nine thousand and forty plants or two thousand four hundred and twenty dozen, which, should they bring only twenty-five cents a dozen would give $605 returns. Celery is also a second crop, an early crop of something else being taken first. A New Hampshire man, not a farmer, tells me that he raised in his small garden on a city lot the past year $110 worth of celery on a sixty by sixty foot area or at the rate of $1400 an acre. The same season he raised two outdoor crops of heading lettuce on a bed six by sixty feet, the sale of which brought $15 or at the rate of $1815 an acre. While this seems large it only means a price of about two cents a head and a square foot of space to grow it in. His market was simply the retail grocery stores of Laconia, New Hampshire, and not fancy prices.

Cabbages pay better than most people realize, and what farmer cannot raise them. Set two by three feet, an acre requires seven thousand two hundred and sixty plants. The price per head or pound varies greatly but anyone can easily estimate his possibilities with this crop. Last spring we grew the newly introduced Early Spring variety, setting it two by two and a half feet apart, and as the heads averaged five pounds and were round and early, we realized three cents a pound for most of it, which was at the

rate of $1305 an acre. Even at two cents a pound it brings $870.

Tomatoes are as commonly used as almost any crop grown. Although the tomato is one of the rankest of plants and an assured producer, it is ever in demand in New England. Even with an increased demand for the canned product, which largely is shipped into New England, our local markets continue firm. Not only do we find a market for all the ripe fruit but I find gardeners who are growing the late Buckeye State variety simply for green tomatoes. The green fruit when well graded brings fifty cents a bushel at retail or forty cents at wholesale. Five hundred bushels per acre of green fruit is a fair estimate which at forty cents equals $200 which can be relied upon. For ripe fruit the price will average seventy-five cents or more for the season. Our Earlianas, one of the newly introduced early varieties, sold during the fore part of the past season at $3 a bushel.

Small fruits of all kinds sell well here in New England. I have already referred to the red currant, but raspberries, both the red and black-caps, are in good demand, and from my experience usually sell for a third to a half higher price per quart than in the West. Blackberries and gooseberries are often not to be had in some of our fairly good sized towns.

There are many other vegetables that I can not take the time to emphasize here, which can be made paying crops in a limited way if not on a fairly large scale on our farms. Bunch beets sown in rows sixteen inches apart and thinned to three inches in the row will give forty-three thousand five hundred and sixty bunches of three beets in a bunch to the acre. These, if sold at an average of three cents a bunch, give $1306.80 as the returns.

The plum crops should receive more attention generally on our farms. While the black knot, plum curculio, and fruit rot, are somewhat troublesome, they nevertheless should not discourage anyone if the trees are given the necessary care. At the New Hampshire Experiment Station we have fruited Burbanks at the rate of one and one-half bushels on five year old trees; and I was interested to note an article from Mr. A. A. Halliday of Windham County, Vermont, in a recent publication, stating that he had secured as high as seven bushels per tree from six year old Burbank trees. When we realize that one tree requires an area

of only sixteen by sixteen feet, or at the rate of one hundred and seventy trees to the acre, surely the returns must be good. Other varieties of plums as Abundance, Lombard, Chabot, etc., are equally good.

We have one man at Wilton in our state, who raises on an average eight tons of grapes a year, and has had success in growing this fruit for the past twenty years. Some think the grape not adapted for many sections of New England, and still others think that even if they could grow them, they would be unable to sell them on account of the competition with the quantities of this fruit that come into New England from other states. I believe both of these notions are erroneous. Adaptable varieties can be grown in most sections if properly handled, and there is always a loyalty to home grown fruits. Mr. Bachelder, the man referred to, tells me that all of his eight tons are sold within a radius of five miles of his place. The Moore's Early, Worden, Wyoming, and Green Mountain have all done well at the New Hampshire Experiment Station.

(3). There is little reason why a man with any interest in his calling should not be able to inform himself in regard to the principles of the modern culture of any of our horticultural crops. The days of apprenticeship methods of finding out how to do things are relegated to the past; today we have plenty of literature and the main test is putting it into practical application. Culture, however, means much more than we are liable to credit it with. The culture of any plant means ideal conditions for its development for whatever purpose desired.

(4). Too much attention cannot be given in studying varieties. These are changing constantly, and it is highly necessary that we take advantage of those that are best adapted to our conditions and the markets.

(5). Executive ability is needed upon the average New England farm, for success, as much as it is anywhere. The average New England farmer needs to study business methods, and horticulture, with its greater intensiveness and variety, will assist very much in testing the business ability of men everywhere should they engage in it. Perishable fruits or vegetables demand active business methods in handling at the right time, while the other farm crops like hay, milk, beef and wood are handled "any old

time," as they are staple commodities. Business methods stand for a large share of success in anything, and it must not be lost sight of on the New England farm.

Horticulture on the farm has its place, and should not be neglected. It pays for family use if in no other way. Horticulture on the farm pays for the education of the young. Horticulture on the farm pays, for it keeps the boy there. Horticulture on the farm pays, for it makes the pocket money. Horticulture is education in plant life. For example, grafting, pruning, budding, propagation, rotations, varieties, soils, fertilizers, cultivation, etc.; these and many more can be studied. It is with these and many other advantages that a much broader horizon is attained. Study possibilities and aim high. Horticulture demands time. Peter Henderson recommends that seven men and three horses should be had to run a market gardening industry of ten acres successfully; and that when embarking in such an enterprise a capital of at least $300 per acre is necessary. One thing that ever needs emphasizing is, do not attempt too much.

It has not been thought advisable nor is it possible to go into other than a general discussion of the subject of "Horticultural Possibilities for New England Farms" in the short time allotted me. Such subjects as details in small fruit growing and various other vegetable and fruit crops, not to say anything about general floriculture and innumerable other questions of horticultural interests, cannot be touched upon; they in themselves would each require much time and afford material worthy of much consideration.

In closing I simply desire to say that under proper husbandry, and modern methods, I believe that we at present little realize the possibilities of horticulture in its various branches as adapted to the conditions of the New England farmer.

Discussion.

A gentleman said that there are some farms that will support a cow but will not support an apple tree. Most apples have failed with him. He has raised the Bethel and Jonathan. His grapes bear abundantly but do not ripen. His farm is about forty miles from Lake Memphremagog.

The lecturer said that Professors Craig and Saunders believe in the production of varieties that will be adapted to these localities. Consider what has been done in Minnesota. The majority of the Russian apples were autumn varieties but we are getting now varieties of all seasons.

William C. Strong said that he was born in the same region as the former speaker (Hardwick, Vermont), and that the apple trees there were vigorous and abundant in produce. He said that there was one important point which had not been emphasized: — the quality of western apples does not compare with the solid fruit of New England which is superior to almost any fruit in the world.

In answer to a question of Thomas Harrison regarding fertilizers, Prof. Rane said, Don't overfeed with nitrogen. We do not want trees that take a thirty foot ladder. When the tops are formed substitute potash and phosphate for nitrogen. Grow fruit instead of wood.

Michael Sullivan asked whether the lecturer would recommend the continuous culture of apple orchards to get good fruit.

Prof Rane said that while trees are growing they need continuous culture to keep them going. After fifteen years the question of culture would be left to the man's own judgment. If the trees are hardy and healthy they will need but little fertilizer. Mr. Sanborn says that his hay crop on nine acres has paid, and his apples also, but he ploughs up when his trees show signs of needing it. One ton of hay per acre will not pay, but three tons will, and if you can get them and a crop of apples at the same time you are so much better off.

Mr. Sullivan said that eight years seems a very short time for Baldwins to come into bearing. He has had them in twelve years. He raises vegetables but finds his fruit quite as profitable as any part of his business.

President Hadwen said that the product from cows sold every day while apples sold once a year only. A young man with a family needs an income every day. His experience was that he needed both. One advantage in having apples in grass land is that you can get a crop of both if you feed for both. Apples from grass land keep better.

Thomas Harrison asked the lecturer what to do with land that has only an inch of soil.

Prof. Rane replied that a man must study his farm, and suggested sheep raising. Where sheep cannot be raised on such soils forestry comes in. Thin and light land should be turned over to forestry.

He said that he did not want to leave the impression that he was not in favor of a few cows to supply the family.

Varnum Frost said he thought farming was overdone and played out in New England. You cannot get more than a new dollar for an old one; last year, not more than seventy-five cents. The prices named by the lecturer are three times what we can get here. He thought the President was correct in regard to the keeping qualities of apples in grass land.

Prof. Rane said that the New Hampshire Experiment Station has paid all its labor by its products.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 25, 1902.

A meeting for Lecture and Discussion was holden * today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered.

THE BUSINESS END OF HORTICULTURE.

BY PATRICK O'MARA, New York, N. Y.

Ladies and Gentlemen:—

When our good friend Mr. Low invited me to read a paper on some subject connected with horticulture I explained, as I did once before, that while being grateful for the honor, I was at a loss to know upon what lines I could prepare a paper worthy of the attention of this Society, second as it is to none in the world. I solicited his advice and the advice of the committee through him and was further complimented by the assurance that anything I should prepare would in all likelihood be satisfactory to them. Being thus, so to speak, at my wit's end, I chose "The Business

* At Chickering Hall.

End of Horticulture" as a title for such observations as I might offer you.

I will stick to the text as closely as possible; but at the very outset the temptation to wander is irresistible. Some may ask if I consider the end of horticulture to be business. This prompts me to observe that I am not bold enough to prophesy the end of horticulture. It also prompts me to observe that since coining the title I have been industriously engaged in a mental quest for the business end of it, but up to the present moment I have not run down any end that looks like it; or tied a knot on it. The quest for the business end of a bee or a mule would be a simpler matter.

An acquaintance of mine in the trade once sagely remarked in my hearing that in his opinion any fool could grow good plants, but that it required a man of great wisdom to sell them. It looked to him as though he had certainly discovered the business end. I may remark parenthetically that the gentleman referred to was a grand and gloomy failure in both departments; he is a fair sample of the "know-it-all." There is a story told to the effect that a young man who was ambitious to succeed in business once obtained the ear of the late Commodore Vanderbilt and sought his advice. He is reported to have asked him whether the secret of success in business was knowledge or some fortunate inspiration. The gruff old Commodore tersely replied; "No, my young friend, not inspiration; perspiration, sir, perspiration." And it may be truly said that if the business joint of horticulture is anywhere in particular it is at the elbow and it should be well greased. Eternal vigilance is the price of much that we have and hold; it is particularly the price the successful horticulturist must pay. The "art that doth mend nature" is not one for the *dilettante;* it is one for the sober, steady, persevering, painstaking, intelligent worker. The cry goes up from many who fail: "I have no luck with my stuff like so-and-so." That wail is even heard from the professional florist who ought to know better. If he watched Messrs. So-and-So he would discover that they are men who studied cause and effect and had the sense to apply as well as the energy to execute. They might perchance be unable to prepare an exhaustive treatise on structural formation of plants or give an analysis of the soil; their methods might be

rule of thumb ones; their school might be, and undoubtedly in ninety-nine cases out of a hundred is an empirical one; but they obtain gratifying results and that is the main point. Doctors' children are not always the healthiest. If there is any calling, trade or profession which requires keen discrimination, quick perception, intuitive grasp and prompt decision in a greater degree than another, it is the horticulturist's. He is dealing with the forces of nature, his charges are mute and cannot announce when something has gone wrong. He must see it. He must do more than that; he must know, if he is to be successful, what is likely to injure them and see that such is avoided. An ounce of prevention is worth a ton of cure in horticulture. Locking the stable door after the horse is stolen is mighty poor satisfaction. These random remarks I trust will be found to have some pointed reference to the "business end" of horticulture.

My experience in the trade has been exclusively along the lines of commercial floriculture so that necessarily my observations will be mainly confined to matters less or more intimately connected therewith. I have enjoyed the advantage of some experience in other branches. I 've rubbed elbows with that interesting personage known officially as the "Ornamental Horticulturist," or, as one of my more learned editorial friends would have him dubbed, "The Ornamentative Horticulturist." A few years ago he was, I suppose, the artist who made a striped elephant with a fluffy tail and planted him on the lawn, who made butterflies and ships, birds and beasts biped and quadruped, who had wheels in his head and got rid of them by expressing himself in wonderful convolutions, rings eccentric and concentric; all in plants that outrivaled Joseph's wonderful coat of many colors. The pity of it is for one of the business ends of horticulture that his tribe did not keep on increasing. I am reminded of a story in connection with that branch of gardening. An itinerant disciple of the "art that doth mend nature" was called in to lay out some beds on a modest lawn. His "art" had not risen above round, square, and star-shaped beds, so when his whilom employer expressed a desire to supplement them with an oval bed he looked embafrassed; he was not quite sure what an oval bed was. It was explained to him that it was egg-shaped and he understood. When the owner came around the following day and looked at the oval he was dis-

appointed; it was overweighted at one end. He reproached the "artist" concerning it and a great light broke in upon him when he was told by him: "Sure, sir, you told me to make it egg-shape; and isn't an egg bigger at one end than the other?" There is some humor even in horticulture. A prospective purchaser went into one of the seed shops, not a thousand miles from here, where garden and farm implements were displayed and asked a young clerk if he sold whiffle trees. He was gravely informed that they did not keep them there but he would inquire of the nursery department. Another purchaser who was giving an order and soliciting advice from a clerk as to quantities of seed wanted for certain numbers of plants finally ordered a pound of raffia. The clerk thinking he was ordering too much of it gravely asked him how many plants of it he wanted to raise? A tree agent some years ago astonished the home office with the quantities of tree pæonies he was selling. Upon investigation, it developed that he was recommending them as shade trees, which had in the summer the wonderful flowers shown in the picture book which he carried. These are incidents connected with the business end of horticulture and they do much to relieve the tedium of the day and hour.

Now, let us consider where the business end, or rather ends of horticulture are to be located. First in importance is the seedsman. Even here there are to be found differences; all do not travel on the same road. There is the box trade for instance, a separate and distinct branch. Long before a town can support a seed store the box makes its appearance. The druggist, the general storekeeper, the jeweller, the grocer, almost any shopkeeper will be the distributing agent for the seeds. The growth of this branch of the trade is something marvelous. In one generation, we have seen one firm expand from a little shop which barely paid the living expenses of the founders into a great institution, which ranks high among the finest commercial houses in the country. So systematized is this particular branch that the seed box follows close upon the heels of the settler into the most remote quarters. Not many years ago I was in a thirty day old town seventy miles from the nearest railroad station, yet the seed box was there before me. Another branch of the trade was represented among the first settlers there, viz.: the seed grower; so

we see that two branches of horticulture are found in the forefront of the developing line. The seed grower is a horticulturist, who does not figure very prominently in horticultural essays, and yet he is an important factor. Many people believe that the large seed houses have one big farm where they grow all their seeds. That would be impracticable for the reason that different seeds can be better grown in different localities. Peas and beans can be better grown in northern than southern localities. California will produce better seeds of many kinds than any other part of the country. Portions of Nebraska produce the best seeds of vine crops to be found in the country. Long Island seems to be the ideal place for cabbage seed production. Portions of Connecticut are unrivalled for the quality of onion seed produced. Northern New York and Maine are unexcelled for potatoes The great Northwest has exceptional possibilities as a seed producing country. Europe still supplies its quota of seeds and bulbs, but with the vast extent of territory over which floats the American flag, with the wide range of temperature, the rich soil, and the energy and intelligence of the men engaged in horticulture, there is every reason to believe that in the near future we will not only produce all we need ourselves, but we will be able to control the markets of the world in seed production. The seed grower for the most part is a contractor, who takes the stock supplied by the seedsman and delivers the entire product. His work is supervised by the seedsman, who inspects the growing crop and carefully "rogues," that is, destroys any plants which are not up to type, which, in other words, show a reversion to an inferior type. It often happens that an improvement will be apparent in individual plants and these are carefully marked, the seed product kept separate and sown the following season. This is the source of many of the improved varieties. It is obvious that the greater the amount of care bestowed on inspection, the greater the intelligence brought to bear upon it, the better in proportion must be the result. It is upon this care and intelligence that reputation is based, hence the difference in stocks sold. The seed growers are often hybridizers, and to the patient work of these men we owe many of the improved varieties now in existence. The greatest vehicle, unquestionably, for developing horticulture is the catalogue of the seedsman, the nurseryman and the florist. The

first is beyond doubt the most important in its effects and might be called the centre from which the business ends radiate. The millions of catalogues distributed annually are an inspiration to the recipients and to the hundreds of thousands who are influenced by seeing their neighbors engaged in horticultural work. Great is the responsibility of the catalogue firms and great is the labor involved. It is undeniably the most trying of all the business ends of horticulture. The men engaged in it must be ever on the watch for new and improved varieties; they must lead and not follow popular opinion; but yet they must be cautious not to get too far in advance. They must be ready to explain why crops fail, they must be able to advise remedies, they must be entomologists, pathologists, be up in soil chemistry, and when the great extent of the country is considered, it is readily understood that the task is not an easy one. They must be ready to tell when and what to plant or sow in farm or garden from Puget Sound to Florida Keys, from Aroostook to San Diego. They must be able to tell the dear old lady what is the matter with her sick geranium or her debilitated begonia. They must be prepared to have their honesty impugned whenever a clerk makes a mistake and sends the wrong variety, they must be prepared very often for the same contingency when, from causes entirely beyond their control, crops fail, plants die or seeds do not germinate. To be successful, the catalogue man must be not only resourceful in business methods, enterprising in developing and introducing varieties of merit, but he must be optimistic, he must be able to communicate his optimism to his customers, he must be liberal in his dealings, be ever patient, be a natural diplomat, and above all things be scrupulously careful to send out only the best obtainable.

What is said of the seedsman is also applicable in a great measure to the nurseryman. The details of his business are hardly as numerous, however, consequently not as trying. His business is in a larger degree localized, which tends to simplify it. With San José Scale, Peach Yellows and other troubles incident to his stock, and the legislative efforts to control them, he is not without troubles of his own. The nurseryman, too, must be up in the "ologies," even more so perhaps than the seedsman; he must be a fair lawyer as well and be an expert in transportation matters. The lithographer and the tree agent are powerful agents

to the nurseryman. The latter armed with his book of plates wends his way over the face of the land, in many cases reviled and thust out, treated little better than the hobo. His book is sneered at, and while it may be a trifle highly colored and the size of the pictured flowers and fruits may be a little exaggerated, yet a long experience has shown that such are the best fitted to tempt the wavering into purchasing something which will really be a benefit to them. It is a case where the end justifies the means, if there ever was one. Many a garden would be given over to weeds which now supports a few fruit trees and small fruits, many a porch and dooryard would be as bare of living ornament as the proverbial "Job's Turkey" was of flesh and feather, were it not for the tree agent and his book. That business end of horticulture is not "one grand sweet song" for the men engaged in it; the emoluments arising from it will not make plutocrats of them. Be patient with them then, if not for themselves at least for the good they accomplish. The good they do lives after them; the evil is cut down and cast into exterior darkness.

The grower for the catalogue firms is another of the business ends of horticulture, that is the man who grows plants in quantity on contract, or who grows them on speculation to sell in large quantities. His field embraces greenhouse plants, fruit plants, hardy outdoor plants, shrubs, roots and bulbs. It is a safe business on the whole, but it is not capable of great development like the catalogue trade. It is generally followed and taken up by men who have some land, but little working capital, and the profits are as a rule very meager. Because of the limited capital with which it can be entered, provided the land is already secured, a great many of the smaller nurserymen, florists and even farmers have entered it of late years, and it may be safely said to be a well plowed field at the present time. Because of the fact that these men are not in touch with the retail market, they grow many things for which there is not ready sale; failing to obtain buyers for these at remunerative prices, they are frequently taken up at a sacrifice and pushed by catalogue men to the detriment of better things. I think it may be accepted as an axiom that the successful catalogue business man must be a bona fide producer, either under his own direct control or by the contract system.

This applies to plants more than to seeds or bulbs which can be treated as merchandise. The expense of catalogues, advertising, packing and growing hardly admits developing a large business by buying plants and selling again; besides there is always the trade grower who has a surplus of something inferior to offer at a tempting price and it is well to beware of "the great pennyworth."

The business end of horticulture represented by the cut flower grower is perhaps the simplest, in a business sense of any, in that the skill of the grower is the paramount issue. His product is sold for what it is worth on sight. Although the market takes exasperating tumbles, he has little if anything to do with it. He is saved the nerve wear incident to bargaining, planning how to get rid of his product, how to get his money after he has sold it, and the many and vexatious problems incident to barter and sale. I speak of the grower who supplies the large cities and consigns to a commission firm. Of course he is constantly consigning the commission man to a place warmer than his hottest greenhouse; but that is his privilege and the commission man gets accustomed to it so no one is much hurt. The market is cut out for him. The rose grower has the great trilogy of Beauty, Bride and Maid; the carnation grower has a little more vexed problem as to the varieties he will grow, but it is plain sailing for the violet grower. The various committees of the leading trade societies settle many a problem for the carnation and chrysanthemum grower; but they like to nibble at the new things so as not to be caught napping. This gives them a chance to grumble once in a while, but it makes life interesting for them. There is always something new coming up in roses, too, to vex the grower. If the man who gets hold of the new one first has a reputation and can succeed in growing it well, it is an easy matter for him to get a market for the plants and so turn an honest penny. But business instinct counts just as heavily in growing cut flowers as in the other business ends of horticulture. It was business instinct which years ago influenced one of our leading growers of roses to discard every flower which did not come up to his standard. That policy made his reputation and was the foundation of his success. It worked both ways, it concentrated his efforts on producing something up to that standard and maintaining it, while it made his reputation. It did more; it elevated the stand-

ard and really made two classes of growers in all lines of cut-flower growing, the one which aims at "fancy" flowers and which embraces all the high class establishments, the other which does the best it can and takes things as they come. I have been among growers of violets and have seen flowers discarded for slight imperfections of color which the unobservant eye would scarcely detect. I have seen roses discarded which a few years ago would have been sent to the market for what they would bring. A walk through the wholesale districts in any of the large cities will reveal to the observer stocks of roses, carnations, violets etc. which seem to be different varieties, although the same, the difference being in the growing mainly, but also in the care with which the cutting, keeping and picking are done. It is one of the most pleasant branches of horticulture and one of the most remunerative for the capital invested. It has developed fastest of all during recent years and although the constant cry goes up that it does not pay, it continues to develop. The demand for flowers is constantly growing and the laws of demand and supply are inexorable. The daily press devotes more attention to it than to any other branch and this has a great deal to do with its development. That advertisement acts also as a corrective inasmuch as it attracts to the trade people with capital seeking investment where there is certain profit. No one flower has been "boomed" more in recent years in the daily press than the violet. The ease with which it can be grown and the attractive profits resulting from its culture have been alluringly set forth by writers in the daily press, who never grew a violet and knew nothing about the subject. The result has been that many people, particularly women with a penchant for flower growing and a desire to earn "pin money," have gone into the business by the hundreds. Their usual method — following the directions of the daily newspaper horticultural teacher — is to procure sashes and a few hundred plants. The certain result is failure for they cannot compete with the professional grower who is well equipped with knowledge and has an establishment suited for the purpose. The almost unvarying result is failure for these enthusiastic tyros; but they are a disturbing element to the trade. They produce some flowers of a low grade which come in at a time when the crop is most plentiful. They also disturb the equanimity of the professional

grower by their eager appeals for advice. They disturb the seedsman and general florist in the same way, but they do not disturb the equanimity of the daily newspaper, for that institution and the young man or young woman who wrote the articles which were the cause of all the turmoil are too busy following up the political fortunes of rival politicians, interviewing actresses and society leaders, dilating on the fluctuations of copper or "nipper" stock, exploiting the careers of aspiring pugilists, revelling in the mire of the latest scandal, picturing the horrors of the freshest murder, reporting horse shows and horse races, thrilling the dear public with prognostications of impending wars, and so the florist is left to reap the troubled aftermath, while the newspaper goes to fresher fields.

The business end of horticulture represented by the shopkeeper in the large cities is a branch unto itself. Its connection with the producing branches is a very slender one and seems to be growing more attenuated. Why this should be does not appear on the surface to most of us. The fact remains, however, that as a class they hold aloof from the trade organizations when it would seem that their interests would be conserved by affiliating with them. The combination of all branches of trade horticulturists in one organization should inure to the benefit of all. The smaller cities are generally represented in the shopkeeping by the man who is himself a grower and whose wife or daughters "tend store" and make up floral designs. The great shopkeepers in the large cities are "artists" and indulge in fads. They in some cases drop their first names like the ladies' tailors and milliners.

The development of that branch has been wonderful; glass delivery wagons with gold mounted harness and something suspiciously like a crest embossed thereon have become the sign manual of the successful floral artist in the large cities. The addition of "ribbons and laces to set off the faces" of pretty flowers seems a natural accompaniment to the style of business, but it seems inconsistent with the prevailing "natural" style of flower arrangement. It is positively painful to see flowering plants swathed in ribbons and paper or tied up with bow knots like a poodle dog, and it is to be hoped the "artists" will abandon it or their patrons get tired of it very soon.

In horticulture as in everything else, the men who originate either methods or varieties are the men who shape the business, ends and all. The men who hybridize, the men who investigate, the men who do the thinking, are the men who supply the motive power for the whole. The originators of the new varieties of fruits, flowers and vegetables have not only conferred a benefit on the public at large but have made it possible for the grower to continue in a profitable business. The man who first propagated roses in summer and began a special business of mailing them showed the way to dozens of successful imitators. The man who developed the idea of the shallow bench and annual planting of roses for cut flowers was in his way a Columbus. The man who first used large glass and light frames in greenhouses made it possible to produce the quality of flowers in evidence today. The men who built big greenhouses to grow lettuce, tomatoes, cucumbers etc., made a great forward stride. The men who started the first trade journal made an important innovation. The business ends of horticulture are many and various and I trust enough has been said about them in this paper to show to those who may not have considered the matters covered that they are interesting and important, at least to those engaged in them.

Discussion.

President Hadwen said that he had not the slightest doubt that there is as good an opportunity in horticulture today as there ever was.

John Ward said that men now demand the luxuries of life which they did not have in youth. Early tomatoes used to bring from eight to ten dollars per bushel; strawberries from fifty to seventy-five cents per box. The expenses of marketing are greater today. Taxes have increased so that farmers must move back where land is cheap. It is much easier to get help now. Italian women can be relied on. He sells a large part of his crops at the stores in Newton. Any man who keeps his eyes open will find some things that he can do better than others.

Varnum Frost spoke of the armies of pests that we did not have forty years ago. We grew lettuce then without trouble. We had no Colorado beetle or brown-tail moth. Canker worms

will exterminate themselves. He said that apples have deteriorated also Hovey's Seedling and Boston Pine strawberries.

Mr. Smith said he could not go away and leave unchallenged a statement in regard to the Agricultural College. He said one could do no better than to direct an inquiry to it. It must not be judged by its weakest graduate.

Mr. Frost said that he could teach anyone present in five minutes how to grow lettuce as well as he can himself. A man born with nature's gifts need not go to Amherst. He learns more from observation than from any other source. All one needs is common sense and a tenacious will.

Hon. Aaron Low said he thought one must be posted on the means of counteracting the influence of injurious insects.

Mr. Frost spoke of a new enemy to melons. The crop has been a failure the last two years. One crop valued at $6,000 was a total failure. Amherst College experts were employed and recommended Bordeaux mixture.

W. W. Rawson said he would give a good deal today if there had been an agricultural college for him to go to. He has a son who went to an agricultural college, first at Amherst, then at Cornell University. If he had half a dozen inclined toward agriculture they would all go.

Kenneth Finlayson asked the lecturer what part electricity is to play in horticulture.

Mr. O'Mara replied that he had not had any experience in that line. Cornell University has instituted experiments but his recollection was that the benefit would hardly pay. He said he thought the average amount of sunlight provided by the Creator is what the plants need. The more sunlight the plant gets the better, but he did not know about electric light.

Mr. Rawson said that he believed that electric light hastens the flowering of plants. If his Easter lilies and lettuce are behind he knows how to forward them, by this means.

The lecturer told of a farmer who could not write his name who had been most successful. The man who has the ability to apply his knowledge will succeed. If he had been able to avail himself of the sources of knowledge he would have made as much money in half the time.

Everything sent out by the agricultural colleges is not to be taken as perfect.

Market gardening in New England is a safer enterprise than in any other part of the country. Southern market gardeners are not making the money that they do in the north. Transportation eats up all the profits.

It is not good to get too far from the city even if you have to pay more for the land.

Michael Sullivan moved a vote of thanks for the interesting and instructive lecture.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 8, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE METHODS AND RESULTS OF SOIL STERILIZATION.

By PROF. G. E. STONE, Hatch Experiment Station, Amherst.

In general the treatment of diseases in greenhouses demands other methods than those which out-of-door plants are subject to. In the greenhouse the gardener has the conditions largely under his control, whereas he can modify only to a limited extent the conditions out of doors. Many of the troubles with which indoor plants suffer are directly traceable to the conditions to which they have been subject and the gardener must be wholly responsible for them. We are therefore not justified in attributing the cause of such diseases to hard luck and the responsibility must be sought for in the limitations of the gardener's skill and intuitive knowledge. There are some disastrous diseases, however, with which greenhouse plants are affected that cannot be controlled by any amount of skill in handling the crop unless recourse is taken to radical preventive measures. Such is the case where the gardener has to contend with genuine parasites or with pathogenic organisms which will attack a healthy plant just as quickly and disastrously as a weak one. Such diseases are produced by the fungus *Sclerotinia libertiana*, Fckl. which causes the Drop in lettuce and the Timber-rot in cucumbers; the *Rhizoctonia* which

affects lettuce, cucumbers and many other plants; the *Pythium de Baryanum*, Hesse. which causes Damping-off in many seedlings; and the *Heterodera radicicola*, (Greef) Müll., a nematode worm that is known to affect one hundred and eighty or more species of plants and which is especially disastrous, whenever it occurs in abundance, to greenhouse cucumbers, tomatoes, muskmelons, violets, roses, cyclamens etc. It is for the control of these disastrous organisms that the sterilization method is especially adapted, and which all other methods of treatment, except for nematode worms, fail. It is also applicable to the destruction of weed seeds, and the red spider and aphis in the soil are killed. This method of treatment is not a panacea for all plant diseases and it has not been recommended by us for the control of the Damping-off fungus (*Botrytis*), or the Lettuce Mildew (*Bremia Lactucæ*, Regel.), or for other fungi which freely propagate themselves by spores. The application of chemical substances to the soil for the control of pathogenic organisms is not practicable except in some uncommon cases; neither is the fumigation method of much value, as gases are limited in their power of penetrating soils. In some cases freezing or drying the soil is effectual, but it is not easy to freeze soil in the greenhouse without removing it, and that method is too expensive, for at the present time it is far cheaper to sterilize soil than to renew it. The sterilization method is the most effectual and absolute method that can be applied in the treatment of pathogenic organisms. Where the pest is confined to the soil and does not disseminate by spores through the air it can be completely and absolutely eliminated.

Since the time when man first made use of fire to prepare his food, sterilization has been in vogue. It was, however, the brilliant researches of Pasteur and Tyndall that annihilated the theory of spontaneous generation and gave us the correct understanding of the rationale of sterilization, and the intermittent method suggested by the latter has been universally employed by bacteriologists.

Heating the soil for the purpose of ridding it of obnoxious organisms has been tested in a limited way for some years and pathologists have frequently made use of pots of sterilized soil where certain experiments demanded such treatment. Among the

first attempts to sterilize soil on a large scale in this country was one in connection with nematode worms on roses, cucumbers etc. This method was practiced in 1895 or 1896 by some florists who were so troubled with nematode worms that a successful attempt was made to treat the soil on a large scale with steam.

The treatment of soil by heat, or sterilization as it is called, has been carried on at the Hatch Experiment Station, Amherst, for some years in connection with troublesome organisms which thrive in the soil and prevent the production of healthy crops. It should be borne in mind, however, that when we speak of sterilization of the soil we do not mean absolute sterilization, but what we actually accomplish is a sort of Pasteurization or partial sterilization; in other words, our soil is sterilized so far as the presence of some obnoxious organism is concerned. Cultures of soil treated with steam which attained a temperature of 212° F. would show a considerable bacterial flora, and the subsequent and continual exposure of the soil to the air and the application of water will enable the soil to become subsequently supplied with a host of organisms which are beneficial, indifferent or otherwise. In order to obtain absolute sterilization and maintain those conditions we would have to make use of the methods employed by bacteriologists. Absolute sterilization we do not desire; and all that it is necessary to accomplish is to destroy the obnoxious pests which cause damage to the crop. A uniform temperature of 180° F. maintained for a short time would accomplish this, but in practice it is far better to exceed this temperature in order to be on the safe side.

During the past year quite remarkable strides have been made in the practice of sterilizing soils. We will now consider some of the methods and results of sterilization. On account of the extensive use of the sterilization method upon a large plan by the most efficient and practical market gardeners the process has been made very much cheaper and quickened to a considerable degree. There have been numerous methods and appliances devised that are great improvements over old ones. In the past year the amount of soil sterilized can be more intelligently estimated in acres rather than in square feet. At the present time whole ranges of greenhouses are being treated and the method has been employed out of doors to some extent.

We have been able to test a great many sterilizing appliances and have looked into the efficacy and practical utility underlying the various methods which have been in vogue. The method of treating the soil by steam to a distance of a foot or more in depth has always appeared to us as the best one to be employed, and, since the cost of such treatment has been greatly reduced of late there appears to be no longer any reason why it cannot be extensively used. The practice of applying one or two inches of treated soil to the top of the bed, while giving good results, has its drawbacks because the process has to be repeated, in order to be of any value, every time a crop is planted. The cost of treating one foot or more of soil in badly infested houses proves an excellent financial investment: for example, some houses have had the Drop in them to such an extent that fifty per cent of the plants would succumb and in some cases nearly the whole crop has been destroyed. In our own experimental house which was purposely contaminated with Drop a few years ago we have experienced a loss in some cases equal to about ninty-nine per cent. In a house containing four thousand dozen plants at fifty cents per dozen the value of the crop would be $2,000, or at twenty-five cents per dozen $1,000. The loss of fifty per cent would reduce the value of the crop to $1,000 or $500 respectively. Such a loss is the more provoking inasmuch as the maximum amount of Drop occurs about the time when the plants are mature and all the labor bestowed on the crop in transplanting, care given to the same, amount of heat utilized, and the valuable space which they have taken up is all for nothing. A house of this description was sterilized during the past winter at a cost of $100, and in examining this crop (which was one of the most perfect I have ever seen) there was only one case of disease in the whole house. This one diseased plant occurred near an iron post that supported the house and there was evidently a small portion of the soil there which had not been sufficiently treated. The cost of treating this small neglected area, however, would be very insignificant. When we observed the crop it had already been mature for nearly two weeks and was being held back for a better market which gave an excellent opportunity for any further Drop to develop if it were present. There appears to be no reason why, if a house is once treated in a manner as thoroughly as this house was, that another treatment

would not be required for some years, provided care is taken to prevent recontamination from refuse material which contains the Drop fungus. Even allowing a few contaminating areas to exist in the soil as a result of imperfect treatment it will probably be five years before the loss would again reach that amount where it would be necessary to treat the soil. It requires no argument to show that the expense of $100 for treatment in a house that would be worth $2,000 at fifty cents per dozen or even $1,000 at twenty-five cents per dozen is a good investment, even if the treatment has to be repeated each year; but on the basis of a five-year treatment which is in our estimation all that is required the investment is nearly five times as good. The increased value of the soil and the possibility of having less weeds and fewer aphis should also be taken into consideration in estimating the benefits derived from the use of this method. One experiment of this kind is sufficient to convince the most conservative market gardener of the practicability of sterilization.

The methods employed for heating the soil have been either by the use of hot water or steam with considerable variation in the mode of applying the latter. Messrs. Hittinger Bros. of Belmont have made extensive use of the hot water method and their later constructed houses have special facilities for applying this in the most economic manner. The hot water method requires the treatment of the soil previous to the putting in of each crop as only a few inches of the surface soil are sufficiently heated by this method to kill the mycelium of the Drop fungus.

The heating by steam is now done largely by the aid of perforated pipes and in some cases use is made of two-inch porous tile, although this method is not so practicable. If finely perforated tile could be obtained in the market at a reasonable cost their use would be of much more value for this purpose than at present. The various contrivances made out of perforated pipe varying from one inch to three inches in diameter and usually placed from seven to twelve inches apart are made up into frames from ten to twenty feet or more in length and into any desired width. The size and number of the perforations vary much in different appliances. Where they are rather large (one-fourth inch) they are frequently covered with burlap. In some appliances the perforations are one-fourth inch in diameter and are only one and one-half inches apart

each way; in others the perforations may be only one-eighth inch in diameter and from three to six inches apart with two or three rows of such holes extending along the pipe. Some of these appliances are not made up into permanent frames but are in sections easily put together or taken apart and are so constructed that they can be readily extended to any length or width desired. These forms are provided with headers placed transversely which are pipes of larger diameter containing perforations, and nipples are inserted at intervals which readily fit into the extension pipes. In some instances the headers are placed at each end, thus forming with the extension pipes a frame composed of a series of rectangles. In this form a complete circulation of steam can take place through the apparatus. In others the headers are in the middle and the extension pipes lead off into opposite directions. In the latter case the ends of the extension pipes are plugged with wood and no circulation of steam takes place. A form of sterilizer recently devised and advertised by Mr. G. M. D. Sargent of Belmont is built after the manner of a harrow. It consists of an iron frame eight feet long by four feet wide with twenty perforated hollow iron tubes corresponding to the teeth of a harrow which are thrust into the soil. The material most frequently used in these various forms of apparatus is iron pipe. The apparatus used and devised by Mr. Cartter is constructed out of perforated galvanized-iron tubes and is very light and easy to handle.

The methods generally adopted by lettuce growers in heating their soil is to place the sterilizer on the surface of the bed. If the bed is twenty feet wide then it would be most convenient to have the sterilizer ten feet wide and twenty or thirty feet long. This is placed midway in the bed and the soil to the depth of one foot or more is dug up on either side and thrown on top of the sterilizer. The steam is then turned on and the soil heated. After sufficient steaming has taken place the pipes can be pulled out and made ready for the next treatment. The soil previously treated is covered up with old canvass and allowed to stand some hours, after which the top portion is shoveled back to where it was taken from. Not only is the one foot or fifteen inches of top soil heated by this method, but the soil underneath the apparatus is equally well sterilized, providing too much haste is not made in removing the

treated soil. In one case that was examined where the steam was left on late in the afternoon for one and one-half hours and the top foot of soil not disturbed until the next morning we obtained the following records of soil temperature at noon on the succeeding day, or nineteen hours after the steam was applied, and five hours after the top soil and apparatus had been removed. The temperature of the soil two feet below the surface was 120° F. and one foot below the surface was 175° F. In this instance two masses of top soil were heated, the last one being left undisturbed over night. The average pressure of steam was only thirteen pounds and it always astonishes those who heat soil for the first time to find that steam can penetrate such a distance below the surface in so brief a period.

Cost of Sterilizing Soils.

In proportion as the appliances have been improved for sterilizing soil the cost of application has been greatly reduced. From reliable estimates which we have been able to obtain from practical lettuce growers and others who have heated their soil, the cost including coal, labor etc., but not the cost of tile or apparatus used, is as follows:—

In a house two hundred and twenty-five feet long by twenty feet wide, one-third of which was treated at a time by steam passing through two-inch tile placed eight inches below the surface and one foot apart and forming a continuous circuit, the cost was at the rate of sixteen dollars for one thousand cubic feet, where a pressure of steam was used varying from thirty to eighty pounds. The heating was continued day and night as this could be readily done on account of a night foreman being employed. The estimated cost of removing the soil from a similar house to a depth of one foot and placing in new soil without carting the same was at the rate of thirty-seven dollars and fifty cents per one thousand cubic feet. This house had been previously sterilized, but with less favorable results, by the same method except that the tiles were placed eighteen inches apart instead of one foot.

Another house forty by three hundred feet was treated by a lettuce grower with an average pressure of thirty pounds of steam passed through one-inch iron pipes furnished with a series of perforations six inches apart and three-sixteenths of an inch in diameter. The

iron pipes were made up into a frame and each pipe was seven inches distant from one another. The estimated cost for sterilizing one thousand cubic feet of soil based upon the treatment of the whole house was $8.33.

A lettuce grower who has a range of eight houses each being about three hundred feet long and thirty-six feet wide has recently treated them all by steam with the aid of a new forty-horse power boiler used exclusively for the purpose of sterilization. The sterilization apparatus consisted of a series of one and one-half inch iron pipes which were ten feet in length and were made up into a frame twenty feet long by about eight feet wide. The apparatus was placed on the surface of the soil and the earth from each side to the depth of one foot was shoveled on to it. The cost of this apparatus was about $20. Mr. C. W. Learned who devised it thinks that he could make a duplicate of it for about $17. In this instance it took three days to treat a house three hundred feet by thirty-six feet and from the estimated cost of labor, fuel etc., the treatment was made at a rate of $5.92 per one thousand cubic feet. The price paid for labor in this instance was one dollar and fifty cents a day.

The sterilizing machine used by Mr. Cartter is made out of two-inch galvanized twenty-ply iron tubing with one-fourth inch holes one inch apart each way. The headers are two or three feet long and are made of the same material and perforated. Galvanized iron nipples are soldered on the sides of the headers six inches apart. The ten-foot length pipes are made to fit over the nipples and also into one another so that any desired length or width of sterilizer can be obtained. This apparatus contains more perforations to the linear foot than any we have seen and for this reason and owing to the diameter of the tubing used it is most effectual as a heater. We observed one test with this sterilizer in which four hundred cubic feet of soil were heated at the rate of $2.00 per one thousand cubic feet. This includes the cost of labor at ten cents per hour, which was required to place the apparatus in position and cover it with soil ready for use, also the amount of fuel burned during treatment, together with the amount of coal it required to bring the same amount of water in the boiler to the same degree of temperature and the steam to the same pressure as before the treatment was started.

Mr. W. W. Rawson claims that it cost him $50 to sterilize a house three hundred by forty feet which would be at the rate of about $4.16 per one thousand cubic feet. This is undoubtedly a very fair estimate of what it costs to sterilize soil when undertaken on a large plan.

Mr. Sargent maintains that two men can sterilize a house one hundred and sixty by forty-five feet with his apparatus in three days. Assuming that it will take forty-two cents worth of coal to heat one thousand cubic feet of soil together with the labor required in setting up the apparatus it would cost about $1.66 to sterilize one thousand cubic feet. This is assuming that the boiler is already in operation for heating the houses and a fireman is employed to run it. It should be understood that there is no shoveling of the soil required with the use of this sterilizer, hence we should expect a saving of expense. When soil can be sterilized at $2.00 per one thousand cubic feet or even at $5.00 there is no longer any question concerning the practical application of this method in green houses for the extermination of some of its worst enemies which interfere with the production of healthy and profitable crops. Even where the cumbersome tile method is employed, the cost of sterilization is less than one-half what it costs to remove the old soil from a house and supply it with new.

Results of Sterilization.

It is not possible for us to give an adequate estimate in dollars and cents as to the amount of money that has been saved by the practice of sterilization, as we do not know the amount of loss experienced by floriculturists and market gardeners in this State due to infested soils. The value of any method of treatment will not be considered for one year alone but for a period of years in order to obtain an idea of its full significance. As a rule lettuce growers have suffered a loss of from fifteen to fifty per cent from the Drop alone and in some instances even greater losses have taken place. There are, however, other beneficial results derived from the practice of sterilization other than those of ridding the soil of disease producing germs. Some market gardeners have practiced sterilization for three years, not wholly for the sole purpose of ridding the soil of certain disease producing organisms, as that can be accomplished by one treatment when properly done,

but largely for the purpose of increasing their crops. We have made many experiments with various crops in which the growth of plants in sterilized soil was compared with the growth of the same species of plants in precisely similar earth not sterilized. The effect of sterilization is quite marked in such experiments.

Mr. W. W. Rawson, one of our largest lettuce growers, who has observed the effect of sterilization on his own crops for three or four years declares that he would rather have one inch of sterilized soil on his beds than any fertilizer which he has ever used.

For the purpose of determining on a larger scale than we had heretofore shown the effect heating the soil had upon the acceleration of a crop of lettuce we grew a crop from the seed to maturity in sterilized and unsterilized soil. The results showed a gain of thirty-three per cent in weight in favor of the sterilized plats. Plants grown in sterilized soil are always lighter colored, more tender and it is not a difficult task for an expert to pick out such plants in the market. Neither is it difficult to ascertain from market specimens what temperatures lettuce crops have generally been subject to. In houses where the soil has been treated twice the difference in the color of plants is very marked indeed showing that the prolonged heating of the soil is much more favorable to the growth of the plant than a brief period of heating.

There was two and two-tenths per cent more water in those plants grown in treated soil than in the untreated as well as a corresponding decrease in the unburned residue representing organic matter, ash constituents etc. From the color and texture of the lettuce grown in sterilized soil this might be expected.

A gain of thirty-three per cent in the growth of the crop is in itself worthy of consideration, so much so in fact that as already stated, many gardeners practice sterilization for the production of larger crops. This means that a crop of lettuce when four weeks old is equal to one six weeks old as ordinarily grown, at least such are the results which we have obtained in our experiments, and lettuce growers have related similar experiences. A great many tests have been made by us on various plants all of which show practically the same accelerating effect in growth and development as a result of sterilization. If one can turn out a crop as fully matured in four or four and a half weeks owing to sterilization as he can ordinarily in six and six and a half weeks without steriliza-

tion then it is evident that there is considerable saving in the method.

There are still opportunities for practical gardeners to improve the appliances for sterilization which will render the operation more efficient and reduce its cost.

Discussion.

W. W. Rawson said he had been very much interested in the lecture. He had consulted Professor Stone, who first brought the subject of sterilization to his notice, many times. He began to practice sterilization about four years ago; he began in a small way with a cartload of sterilized soil. He first spread an inch of sterilized soil on the surface of his beds; later two inches, and he now sterilizes all the soil used. He has sterilized the soil in thirty-four houses and fifteen hundred hotbeds. The subject is yet in its infancy. Sometimes after sterilizing the soil very fine crops will at first result, while the second and third crops will be poor, but this, Mr. Rawson contends, is due to poor management of the crops and not to sterilization. Mr. Rawson uses two-inch perforated pipe, thirty feet long. His men put them in while the steam is getting up. He can use each sterilizer two or three times a day. He considers the time and money well expended. If he had to spend $1,000 a year in sterilizing he would do it, but he thinks it will be necessary only once in three years. He considers sterilization one of the most important subjects in connection with his business. In his floral department he sterilizes all the soil used in pots. He has not compared his crops with those grown in unsterilized soil because he has none.

Professor Stone said that all the experiments he has seen show a wonderful penetrative power in the steam. The soil should be left undisturbed for a number of hours after sterilization and the heat will gradually work down. The greater the pressure of steam the more effective will be the sterilization. He would like a pressure of steam of at least fifty pounds to accomplish good results.

George D. Moore said he had two houses of lettuce, one sterilized and the other unsterilized. The lettuce in the unsterilized soil was the best; that in the sterilized soil grew more rapidly and did not head so well.

The lecturer said that Mr. Wolfe of Worcester sterilized his house of cucumbers and produced an average of one hundred and fifty-five number one cucumbers to a plant, but it was not all due to sterilization. He has a very fine strain of seed which he produced himself. The foliage has a great deal to do with getting good fruit. You cannot obtain good cucumbers without good foliage; ninety-five per cent of the plant food comes from the air by means of carbon assimilation taking place in the leaves. It is well known that when we heat soil the humus compounds or organic matter is more available. Heating the soil may drive out old gases. It is possible by judicious management to control the plants so that they will not grow too rapidly. Sterilization affects only those disease producing organisms which are in the soil such as Drop, Rhizoctonia, eel worms, and one of the damping off fungi, Pythium, but the common damping off fungus Botrytis which attacks geraniums, cannot be controlled by sterilization. Nematodes or eel worms are closely allied to the worms seen in vinegar and in paste. They do not live out doors in our climate at least through the winter. In the southern states they attack various economic trees and their control in that latitude is a difficult matter. They injure muskmelons much more than cucumbers. It is very difficult to control them there.

Joshua C. Stone asked why it is that one man will have diseases of every kind in his greenhouse, while his neighbor will run his for ten years without disease of any kind.

Professor Stone said that perhaps the man needed sterilizing. Some men can go into a greenhouse and see with an instinctive glance just what it needs. Diseases are communicated by exchange of plants. One grower in Springfield has never had certain diseases because he has never exchanged. We are going to have more of this trouble with plant diseases as soon as our commercial intercourse increases.

Varnum Frost said he thought many troubles might be attributed to continuing crops on the same soil year after year.

A vote of thanks was passed for the interesting and instructive lecture.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 15, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

FUNGOUS DISEASES OF FRUITS.

By PROF. M. B. WAITE, Dept. of Agriculture, Washington, D. C.

The diseases of fruits may be divided as to their cause into two great classes, parasitic and non-parasitic. The non-parasitic class includes diseases induced by bad soil, too high temperatures, too low temperatures, too constant temperatures, sour soil, bad drainage or excess of water, resulting in asphyxiation, alkalies, organic acids or other poisonous substances in the soil, poverty, drought, sun-scald, mechanical injuries, and all such causes. It further includes physiological disturbances within the plant itself, as well as the disease called chlorosis, by which the plant fails to take up iron although the soil is abundantly supplied, and diseases of nutrition caused by over feeding; also those of an enzymic nature, by which the plant loses control of its enzymes or vegetable ferments.

Turning now to the parasitic class, there are two main divisions, the animal and the vegetable parasites. Among the animal parasites are Nematodes or eel worms, Phytoptus and other mites, and the great family of insects. The sucking insects, gall producers and scale insects are intimately associated with the plant itself, and are typical disease producers. It is a question whether the work of the larger leaf-eating and feeding insects should be classed as disease, for it is only a step from this to the depredations of birds, mice, rabbits or even cattle.

The vegetable parasites of plants belong almost wholly to the great class of fungi, whose species, both parasitic and saprophytic, probably equal in number all other plants. The mistletoe, a flowering plant, is parasitic on the pear and the apple, producing a disease of these trees. Some algae, or even lichens, may be classed as disease producers, but practically all the vegetable parasites of fruits belong to the fungi or their very close allies, the bacteria. The number of the diseases of plants

produced by fungi is also very large. It is not rare at all for native plants to have as many as a hundred such diseases. The grape has fifty fungous diseases, and the apple in this country alone has thirty-five at least.

Disease, in its broadest sense, has been defined so as to include every possible unfavorable factor entering into plant life, and the origin of the word *dis-ease* lends some color to this definition. On this basis we should find very few healthy plants, and using this broad definition it would hardly be possible on theoretical grounds, to have a healthy plant. Professor Bailey has aptly stated that every plant has within it the potentiality of developing far beyond what is reached in ordinary cultivation. We know this is true, for as methods of growing plants are perfected, we see specimens under particularly favorable culture, reach still higher and higher development. The classification of diseases above given may seem to include an unnecessary variety of causes, but it is none too broad, for I am certain that within the past season in my orchard work I have seen repeated examples from every one of the causes mentioned. In fact, with a few exceptions, I have seen disease from all these causes in a single day's trip.

The ordinary conception, however, of disease in plant life is somewhat more restricted than above given. Disease may be defined as a condition of the plant by which it is rendered partially incapable of responding to its environment. By environment, is meant conditions of light, temperature, moisture, physical and chemical condition of the soil, in other words, the ordinary atmospheric and soil conditions. The gardener will say that a particular plant is not diseased; it has only met with an accident and will soon recover and grow thriftily again. On the other hand, this choice plant refuses to grow in spite of the most perfect cultivation, pruning, watering and adaptability of soil and climate. It therefore must be sick. This more restricted definition would exclude the ordinary direct effect of unfavorable environment, as well as injuries by feeding insects, birds and animals. It would include all physiological, enzymic and nutrition disturbances within the plant itself, as well as parasites which are intimately associated with the plant tissues, and is, I think, the definition more commonly in the mind of plant cultivators and orchardists.

The foundation for the study of the fungous diseases of plants was begun by the early mycologists more than a hundred years ago, and the work in systematic mycology during the past century has very greatly aided the study of modern pathology. Even the mere classification and naming of the species of fungi have been necessary for a complete understanding of the subject. This classification and nomenclature and the work of de Bary and his pupils on the life history and biology of the fungi have been the basis for modern pathological work. In fact, the biology of the fungi, taken in connection with the progress in the study of plant physiology, has made plant pathology possible. The mycologist studies fungi for themselves, though they may be parasitic and live on a host plant; yet he regards the fungus as the important thing and the host plant, from his standpoint, is useful only as a support to the fungi. The plant pathologist, however, turns his attention to the higher plant rather than to its parasites, and studies the parasites mainly in their relation to the host plant. Plant pathology is really quite a new science, in fact, scarcely more than twenty-five years old, and the knowledge of the treatment of plant diseases has grown up almost entirely within the past fifteen years. The results of investigations of plant diseases have been so satisfactory that the more these subjects have been studied, the greater has been the demand for still further research. The number of investigators is large and the amount of work now being done on this subject is very great and is rapidly increasing. It is a satisfaction to know that our own country leads the world in this line of investigation. Our universities, State experiment stations, and the United States Department of Agriculture, combined, are doing quite as much work as any other two countries, perhaps as much as all the rest of the world. The Department of Agriculture has just about doubled its corps of investigators of plant diseases within the past year. Not only have investigators been active, but the cultivators of plants, especially the fruit growers, the horticultural press and horticultural associations, have taken up the study of plant pathology energetically.

The word "fungicide," which was only coined in 1886, "Bordeaux mixture," "Monilia" and other technical names of fungi, are now common every-day words to the progressive fruit grower. It was an easy matter a few years ago for a mycologist to lecture to

an audience like this, for all his common knowledge was new to his hearers. In taking up the study of some of the more important orchard diseases, I will endeavor to give the principal facts concerning them, and especially their treatment, but fear, however, that much of the information which I can impart is already known to you.

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*Pear leaf blight, caused by the fungus *Entomosporium maculatum*, produces small round spots on the foliage and causes the leaves to drop early in the season. It also produces ugly hard spots on the fruit, frequently causing it to crack open. It is readily preventable by spraying with Bordeaux mixture, about three treatments being necessary on orchard trees. The first should be made as soon as the foliage is well out, about three weeks after the bloom sheds, and the other two at intervals of ten days to two weeks.

The quince spot and leaf blight of the quince is caused by the same fungus and is preventable by the same treatment. However, the first treatment should be slightly earlier in the case of the quince. Pear stocks and quince stocks in the nursery suffer severely from defoliation caused by this fungus. The treatment in this case should be more complete, the first spraying being made as soon as the earliest leaves are expanded, and about six treatments are necessary at intervals of ten days to two weeks.

Apple scab is one of the well-known pests of apple orchards, especially in the North. It is caused by the fungus *Fusicladium*. An allied species produces the pear scab, a similar disease of the pear. These diseases are also readily preventable by spraying with Bordeaux mixture. The treatment, however, should begin early in the season, as soon as the buds have burst from the cluster and exposed the individual flower buds. About three to five treatments are necessary.

The bitter rot of the apple is a very serious pest in Maryland, Virginia to Missouri and southward. While scab is particularly bad toward the North, bitter rot takes its place toward the South. The treatment for bitter rot should be about the same as for apple

*The portion of the lecture which follows was given from a large number of lantern slides thrown on the screen. As the pictures cannot be reproduced, only an abstract is given.

scab, but the results of spraying have not always been satisfactory. In the mountains of Virginia, both bitter rot and apple scab occur, the latter attacking the Winesaps, while the former attacks the York Imperial and Newtown pippin.

Canker is the term applied to several diseases which attack the bark of apple, pear and other fruit trees. This type of disease can usually be prevented by spraying with Bordeaux mixture. Where it has already appeared on the trees, it should be cut out as much as possible, the wounds, where large, coated with paint or liquid grafting wax, and then the trees thoroughly sprayed in early spring until they are blue with rather thick Bordeaux mixture.

The fly-speck and smut fungi, which cause such a bad appearance of the apples in the Tidewater region of the Atlantic Coast, especially in the Middle States, are very easily preventable by treating with Bordeaux mixture. The treatment outlined for apple scab and bitter rot is very efficacious.

The black rot of the grape still maintains its position as the most serious pest of this fruit over a large portion of the country. The destruction wrought by it in the Niagara vineyards of North Carolina this last season was almost complete, and the Delawares were seriously injured in spite of more or less spraying. No diseases, however, have been more thoroughly demonstrated to be susceptible to treatment than the black rot and mildew of the grape, although we regret to say that the annual losses from these diseases still continue to be large. The first treatment should be made with Bordeaux mixture just as the buds are swelling. The second treatment may be made when the grapes are in bud, a third just after the fruit has set, and the fourth and fifth at intervals of ten days to two weeks. If spraying is deemed necessary after the fruit is from two-thirds to three-fourths grown, the ammoniacal solution of copper carbonate should be used instead of the Bordeaux mixture to avoid discoloration of the ripe fruit.

Pear blight is one of the most destructive pests of pomaceous fruits. It is caused by the microbe *Bacillus amylovorus*, one of the bacteria. This germ works in the blossoms, young fruits and fleshy bark, killing these tender succulent tissues and resulting frequently in the death of the entire tree. The disease enters the tree normally through the nectary of the blossom, and is carried from flower to flower and from tree to tree by bees and other insects

which are visiting the flowers for their nectar. It also enters the tree through the tender tips of young shoots, but even here insect punctures and insect distribution is probably necessary. The tree resists the inroads of the blight quite strongly, and in a majority of cases successfully, the resistance depending on a number of different factors. In the majority of cases of infection of pear blight, the blight dies out completely during summer time. In a few cases, however, the disease gets into the fleshy bark of the limbs or body and remains alive over winter. These cases, which I call hold-over blight, start the infection on the blossoms the next spring. The remedy for pear blight consists especially in cutting out the hold-over blight in the fall of the year. The work should be done very thoroughly and carefully, cutting from six inches to a foot below the lowest discoloration. The trees should then be examined very carefully the next spring just before the blossoms open to be sure that no cases have escaped attention. Cutting out during spring or summer when the foliage is on is beneficial always, but may not necessarily be effective in eradicating the pest. About two to three weeks after the blooms have shed, is an important time to inspect the pear orchard for blossom blight, and the prompt removal of a few cases at this time may be very beneficial. In cutting out blight always carry a sponge or piece of cloth and a solution of corrosive sublimate one part to two thousand. Wash over each wound with this solution and wash the knife or saw frequently with it.

Peach yellows is one of the most serious diseases of the peach and has utterly eluded all efforts by scientific men to find out its cause. There are many things, however, known about the yellows which are important to the orchardist. The disease is a communicable one, spreading rapidly from tree to tree and from orchard to orchard. The method of communication is not known, but it may be artificially communicated by budding from diseased trees. As no such process normally takes place in the orchard, there must be some other way by which the disease is transmitted. The disease behaves like a contagious parasitic malady, but no germ or microbe has ever been found. Strange to say, the disease can be prevented as thoroughly and satisfactorily as any known plant disease, although the common opinion of horticulturists is to the contrary. By promptly removing trees at the very first ap-

pearance of symptoms of the disease, it is possible to keep it entirely in control in an orchard or in a region. The first symptom of the yellows consists of the spotting and premature ripening of the fruits. These premature peaches are very striking in appearance and very easily detected, and should always be considered a cause for the prompt removal of the tree. Later the tree assumes a yellow cast of foliage and bushy, wiry, yellow sprouts are produced, and, if the tree is not dug up, it dies after three to five years. There is a great demand in the localities where this disease is prevalent for some one to find out the cause of the yellows, and yet it is very doubtful if any better treatment could be found than the eradication method now very well known. The difficulty with this, however, is to get people to put it into execution.

The rosette is a very similar disease to the yellows but is restricted to the South so far as is known, it being limited mainly to the State of Georgia. This disease is very much quicker in its action than the yellows. The first symptoms appear in the spring, and frequently the trees are dead by August and never survive the year.

The little peach disease is a comparatively local disease in Michigan and New York State, but is very severe in a few localities. The main symptoms of little peach are the reduced size of the fruit, the belating of the fruit, the yellow color of the foliage without apparent cause, the diminution of twig growth, and finally the gradual death of the tree, limb by limb. Careful investigation of this disease has shown it to be distinct from the yellows and rosette. It is thought to be due to a root parasite, a minute fungus growing on the feeding roots.

The Monilia fungus, causing the rot of peaches, plums and other fruits, is one of the worst pests of the stone fruits. This fungus is greatly favored by wet weather and does an enormous amount of damage in the Atlantic Coast States from New England to Florida. The past season it was particularly destructive from Maryland southward to Georgia. By far the larger part of the early peach crop of Georgia was destroyed by it, and in some orchards in Virginia the entire crop was taken, both early and late. It largely disappears when long periods of drought occur at the ripening time. Persistent efforts have been made by a large number of investiga-

tors for the past five or six years to treat this disease by spraying. Various fungicides have been employed, and different times and numbers of treatments have been used. The results, we regret to say, have not been satisfactory. There seems to be but little trouble in preventing the Monilia, at least greatly reducing it in an average season, although in a very wet season this part of the program cannot always be fully carried out. The main difficulty comes from the injury to the peach trees by spraying. Bordeaux mixture sprayed on apples, pears, quinces, and also on potatoes and many other plants has a distinctly beneficial effect on the plant aside from its fungicidal value. It increases the amount of chlorophyll, making the leaves darker green, and enables them to stand more drought and heat. They persist longer on the plant and do more work. In case of the potato at least, they assimilate more starch. There are probably minute amounts of copper salts absorbed into the leaves, producing this beneficial or tonic effect. On the other hand, the peach and the Japanese plum, as well as the violet, bean and some other plants, are injured by the copper spray. These plants probably absorb a large amount of the dissolved copper salts in their foliage. At any rate, their tissues either contain some substance on which the copper acts injuriously or are so constructed as not to withstand its toxic effects. The injuries to the peach by Bordeaux spraying are of two main types: first, the shot-hole and corrosive effect on the young leaves; second, the defoliating effect. The shot-hole and corrosive effect is first noticed and occurs shortly after spraying but does not increase to any extent after the spraying has ceased. The defoliating effect may not begin until two or three weeks after spraying and then gradually increases until the entire trees are bare, resulting in poorly colored, insipid fruit or, in some cases, in its being dropped from the tree. There will be many experiments tried on this disease during the coming season, including some by the Department of Agriculture, in the hope of getting a treatment that will not only kill the fungus but will not injure the foliage.

As far as we know at present, Bordeaux mixture can only be applied to the peach with safety before the leaves are out in the spring. After the foliage is out this spray should be used with caution. If peach foliage is sprayed at all with Bordeaux mixture,

instead of the standard formula of six pounds of blue-stone to four pounds of lime, a dilute formula should be used containing an excess of lime, namely, three pounds of blue-stone and nine pounds of lime to fifty gallons of water. Copper acetate and the ammoniacal solution of copper carbonate have both proved very severe defoliators in my experiments. We shall try several other fungicides this year, including sulphur compounds, in the hope that one can be secured which will prevent the Monilia without injuring the foliage.

The peach-leaf curl is one of the few fungous diseases of the peach that is easily preventable by spraying, for the reason that the spraying in this case is done just as the buds are swelling. Ordinary standard Bordeaux mixture should be used for the purpose.

Strawberry leaf blight is a very troublesome disease with many growers, although efforts to prevent it have been very successful by the selection of resistant varieties, thorough cultivation and renewal of the beds. However, it can be prevented by spraying, if it is so desired.

For direct spraying on the plants there is no fungicide at all comparable to Bordeaux mixture in the great majority of cases. For certain purposes, as for instance, the later sprayings of grapes and other fruits, the ammoniacal solution of copper carbonate can be substituted for it, but it never quite equals the Bordeaux in efficiency. For some fungi, notably the surface mildews, a solution of potassium sulphide, or liver of sulphur, seems to be more efficacious. Bordeaux mixture represents the highest type of a fungicide, not so much from its killing power on the fungi as for its harmlessness to the host plant. It is not equal as a disinfectant or germicide to copper sulphate or any of the soluble copper salts, to chloride of lime, formaline, corrosive sublimate, or such poisons. There is a great deal of very bad Bordeaux used in spraying, and it is possible to mix the blue-stone and lime in such a manner as to make vast differences in the mixture. The correct Bordeaux mixture should be sky-blue in color, of a very fine grain, and should settle very slowly. The copper must be completely neutralized by the lime. To make good Bordeaux, it is usually best to prepare stock solutions of both the lime and the copper sulphate, containing one pound to a gallon of water in each case. To make, for instance, fifty gallons of Bordeaux, dilute the

lime with twenty-five gallons of water and the blue-stone with an equal amount, and pour these quickly into a third vessel, stirring rapidly. The quality of the lime is very important. A good grade of stone lime should be used which will slack up evenly into a fine paste, and will dilute into a smooth, creamy mixture. For the purpose of more readily mixing the lime and blue-stone solutions, I have devised several arrangements by which the two can be diluted in barrels or tubs and then run by gravity through a rubber hose into the receptacle. Standard Bordeaux mixture should contain six pounds of blue-stone and four pounds of lime to fifty gallons of water, and is known as the 6-4-50 formula. Strong Bordeaux may be made with half the amount of water for spraying in winter time on dormant trees. For spraying peach foliage, dilute Bordeaux containing three pounds of blue-stone, nine pounds of lime and fifty gallons of water is to be preferred. This will be known as the 3-9-50 formula.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 8, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE INFLUENCE OF AMERICAN EXPOSITIONS ON THE OUT-DOOR ARTS.

By WARREN H. MANNING, Boston.

Ostensibly World's Fairs are promoted to enable all countries and states to display to many people their natural advantages and resources in such a manner that colonists and capitalists will be induced to develop them, to enable manufacturers and other producers to extend trade by showing their products, to display works of art and the results of sociological, philanthropic, and religious efforts, and to bring together in conference the representatives of all such activities for an exchange of ideas and mutual acquaintance. Really World's Fairs are promoted to "boom" a city and to induce our national and other governments to put money into the coffers of local merchants. Local sub-

scriptions are invariably solicited on the ground that the fair will draw a certain number of visitors, each one of whom will leave a specified sum of money of which each local contributor must surely gain some part. Each exposition is followed by a local contention as to whether the city was or was not benefited, on the whole, by the undertaking. Presumably the division of opinion lies between those who did and those who did not receive what they regarded as a fair share of the governmental and individual contributions to the city's welfare, with a sprinkling on the one side of those of the real workers to whom the honors they received were not enough to offset their labors, and on the other side of those whose vanities were pleasantly tickled. In any event it is safe to say that no city once having gone through the throes of a World's Fair will attempt another in this generation, even if it were possible to again induce a paternal government to lay a few million dollar eggs in the exposition nest.

It is of course difficult to trace the direct results of an exposition. A city probably receives directly from the exposition more money than it actually expends, but indirectly the loss is probably much greater than the gain. Many of the "boomers" of the fair have little to lose and much to gain. The substantial and far-seeing citizens are compelled to contribute time and money from a feeling of loyalty to their city. They know that without such contributions the fair would be a failure. Many of them know, too, that the same amount of money and energy expended upon the improvement of the city, the improvement of the condition of the people and the development of its industries and resources would result in an infinitely greater permanent gain. They know that much local capital will, in view of the fair, be tied up in undertakings from which no return can be hoped for a long time after the fair closes, and, furthermore, that the exposition will lead capitalists to invest money in other localities that otherwise would be invested at home.

This, of course, is the selfish point of view, but it is, we believe, the point of view that will result in defeating, after the St. Louis Exposition, any further attempts at a great World's Fair for a long time, unless it may be at the national Capital, directly under the auspices of the United States government with periods of special interest and special transportation facilities

and rates to draw citizens from all parts of our own and foreign countries. At Washington there is and always will be the best representation of the country's resources arranged in the most instructive manner. It is likely that there will continue to be local expositions in which local resources will be effectively displayed. If they could be in a sense outposts of a great permanent exposition at Washington which could establish traveling exhibits for their benefit, they would be of far more permanent value than the theatrical outbursts of local pride represented by the quarter century exposition period that is passing by. However much or little cities may be advancing their own interests by holding expositions, I think there can be no question as to their value in promoting the welfare of the nation as a whole as long as they are given a distinct educational value and can draw large numbers of visitors to profit by the lessons they teach. If it were not so there would be no justification of national appropriations.

It is of course difficult to trace or measure with definiteness the results of a World's Fair. Every one of the millions of visitors to our great expositions must, however, have been quickened intellectually by what they saw and morally, too, if they kept away from the midways. Surely the Court of Honor at the Chicago Exposition was a dream of beauty that could not fail to lift all thoughts and aspirations to a higher plane. Many people needed such an incentive to draw them from their homes and give them the broader outlook that travel alone can impart.

The bringing together of widely separated men and women representing all the activities of a nation, or of the world, in organized conferences or even in accidental meetings will do more to promote these activities than will a large amount of correspondence and reading. An enthusiastic individual can by his presence and personal appeal make for his cause life-long workers of individuals who could only be mildly interested by written appeals.

A state's exhibit of its resources may induce a single individual to establish industries that will yield a return many times in excess of the cost of the exhibit. The same result may grow out of a manufacturer's exhibit, or from a new idea gained by a mechanic. Surely the influence of a comprehensive fine art exhibit upon all people, and especially upon the thousands who

have never seen real objects of art will alone justify large expenditure of time and money.

One of the most important results of the exposition as far as they relate to the material and æsthetic welfare of our nation as a whole is the advancement of the outdoor arts as represented by landscape design, architecture, sculpture, the closely allied industries of floriculture, horticulture etc., and the closer personal and professional relations that have grown out of the design and execution of the plans for these world's fairs.

Well organized, united action of this character began at the World's Columbian Exposition, at Chicago in 1893. We must not overlook, however, the Centennial at Philadelphia in 1876 and its very marked influence upon the outdoor arts. Here the design of buildings and grounds was governed very largely by the engineer. The architectural profession did not then have the influence which it has now and landscape design was represented by only a few able men whose public work had been confined almost wholly to public parks, the design of which had not at that time developed sufficiently in beauty for people to realize that the profession would eventually stand at the head of the arts of design.

The so-called Queen Anne style of architecture, the general use of hardy rhododendrons, and the introduction of bedding-out designs in tender plants were direct outgrowths of this exposition. The introduction of rhododendrons was of real permanent value. The use of bedding-out plants developed into a craze almost as bad as the tulip mania of the Dutch, and its more ardent devotees devised such astonishingly curious and ludicrous conceits that discredit was cast upon such a use of plants. This, coupled with the excessive cost and the comparatively short period of perfection, is resulting in the gradual abandonment of the bad as well as the good features of bedding-out. The less said about the Queen Anne house, the better; it was a bad case of architectural jim-jams from which the ready-made plan architects have not yet recovered. The good architect of today simply gasps and says nothing when this period is mentioned in his hearing.

The Chicago World's Fair grew out of a sympathetic, harmonious and united effort on the part of the ablest men of the outdoor art professions to secure perfectly proportioned groups of buildings with suitable landscape environment and perfection

in detail. No other exposition in this generation has come or will come as close to the highest ideal as this, because so many men of equal ability cannot be induced to give their time and best thoughts so unreservedly to such a problem again.

The influence of the Chicago Exposition upon the men engaged in the outdoor arts was positive and direct. That it was a profound inspiration to architects to do better work was made evident almost immediately in a better class of business, residential and public buildings. It gave as nothing else had done, to professional men and the people at large a clear conception of the profession of landscape architecture as a fine art, for it was generally known that the site was adopted on Mr. Fredk. Law Olmsted's advice, that he outlined the general plan in his report, and was one of the conferees that placed the first draft of the plan upon paper, and that all landscape work was under his direction. The sculptors and mural decorators also opened a broader field of usefulness by their work at Chicago. Since this fair the men and women of the allied fine art professions have been coming closer and closer together in their relations. They are seeking to coöperate with each other more frequently in public and private work. A natural outgrowth of this coöperation is the serious and practical consideration of comprehensive schemes for the promotion of civic beauty that will after a time make America the most beautiful country in the world.

Every important exposition that has followed the World's Fair copied the essential features of its plan. The California midwinter exposition immediately following was not an artistic success taken as a whole and it did serious injury to and left undesirable mementos in a beautiful park. The Omaha Exposition was an artistic success so far as buildings were concerned, but it followed the lines of the Chicago Fair too closely and suffered by comparison. The Atlanta and Nashville Expositions were lacking in the beauty and unity that gave the Chicago and Omaha Exhibitions distinction. Their average of excellence was high enough, however, to have an influence for good upon the whole South, as will be true undoubtedly of the Charleston Exposition. The work at Buffalo was taken up in the same spirit as it was at Chicago by a different group of men. No one can deny the brilliancy and beauty of many portions of the exposition. There

was not, however, that careful and successful adjustment of proportions that was the hall-mark of great minds acting harmoniously at Chicago. It was, to use a recent expression, designating the work of the architect, the "frozen music" of a remarkably successful vaudeville entertainment, not that of a grand opera. The color scheme, a most difficult problem, was well handled. So also was much of the planting in interior courts and about the bases of important buildings. The use of the upright forms of red cedar and poplar growing out of masses of shrubs at salient angles of buildings was especially appropriate. The use of vines in window and roof boxes also added much to the gaiety and grace of certain architectural features. Away from the buildings the spotty beds in lawns gave the grounds the appearance of having a bad attack of an unpopular malady that since the exposition has come to be wide-spread. The Pan-American Exposition was not alone in this respect. The general effect of the grounds about the buildings of nearly every exposition has been disfigured by beds of really fine material that did not come into harmonious relation with the buildings, or the plan of the grounds, but were mere spots set apart by themselves.

It is too early to determine the influence that the Pan-American Exposition will have upon the outdoor arts. Following the precedent established by the two other great expositions, we should expect an eruption of excessively ornamented and highly colored structures perhaps quite as bad in their way as the poor Queen Anne's nightmares, because few men can hope to design successfully such buildings as were represented at the Pan-American where the whole situation was controlled very largely by the only men who have been eminently successful along these lines. Probably the sober sense of American architects will discourage this movement, especially in the colder sections of the country where this style of architecture would be quite out of place.

A reference has already been made to the spotty planting of considerable sections of almost all World's Fairs' grounds. Primarily, it is due to a defect in the general plan of the expositions whereby no adequate provision was made for such outdoor exhibits. The out-of-the-way back corners of no use for other purposes were assigned to such exhibits. Usually the soil

and situation were bad, and this, coupled with the shortness of time available, made a successful exhibit of hardy plants an impossibility. Exhibitors could make this injustice so evident that exposition authorities were compelled to grant locations in the open spaces designed solely to give the buildings an harmonious setting. The only really successful exhibits possible were of particularly vigorous plants that would grow well or continue to look well the first year, such as Cannas and Rhododendrons.

Horticultural interests have never been adequately represented at any of our World's Fairs, and even if favorable conditions had been provided the time was too short to prepare and establish exhibits in a satisfactory manner.

The Massachusetts Horticultural Society is large enough, strong enough, and able enough to take a commanding position with reference to all matters that pertain to the interests it represents along the lines of outdoor art work. Now, societies like individuals have periods of repose and during these periods of repose they sometimes have pleasant dreams in which some little incident is so startling and shocking that they wake with a shudder and a scream and for a few hours are so unstrung that they will quarrel with their best friends; but a day's activity dispels all this and in another day the whole incident is forgotten. The Massachusetts Horticultural Society needs a day of activity; it needs to study the movements of the day, the influences growing out of such expositions as have been referred to, and the work of other societies having objects similar to its own — then to study its own work to see if it is gaining or losing power and influence. If it is losing, then the control of its wealth is likely to come into the hands of a few able, shrewd, selfish men who will establish a mutual admiration society with occasional banquets and just enough work to keep other members quiet. If it is gaining it will take up new and living issues that will interest every member and make active workers of a majority and benefit the public at large. It will bring its work before the members in fresh, timely publications issued at frequent intervals; it will encourage such new lines of work as have recently been laid down by the School Gardens and Children's Herbariums Committee; it will discourage the ancient and commonplace in its exhibits by actively encouraging new exhibits and new

exhibitors; it will encourage more original investigation and less exploitation of old things; it will reach out both hands in good fellowship to other local societies having closely allied objects in view, coöperate with and aid them in their work and at the same time add to the interest of its own exhibits as it has done through its connection with the Boston Mycological Club. It will not compete, even remotely, with the legitimate work of other societies, as it is doing in its exhibits of wild flowers, or duplicate work that comes directly within the field of, and is being done by, another society, as it is in its Forestry Committee.

It will continue to coöperate with other societies in the care, acquirement, and safe-guarding of public reservations, or in the preservation of notable landscape objects as it has with the Forestry Association in connection with the Greylock Reservation. It will continue to extend a welcoming hand to visiting national associations having allied interests as it has to the American Park and Outdoor Art Association.

In closing let me express an opinion that active aggressive work and cordial sympathetic coöperation with others will place the society on a still higher plane than it has been in the past, and bring correspondingly greater results; also that an aggressive and good-tempered discussion of all the problems coming before the society will do it good, and I hope most sincerely that what I have said may help to bring this about.

Discussion.

Benjamin P. Ware said that he should like to inquire whether the lecturer felt that the desire for World's Fairs was at an end, and asked if there were not other ways by which people could acquire love of beautiful homes and home surroundings than through the lessons taught by a great exposition.

Mr. Manning replied that though the public get great good from the expositions, such fairs have proved to be unsuccessful financially, and it is doubtful whether, after the St. Louis fair, any other great city can be induced to undertake another one. A horticultural Society like this could, as regards outdoor arts, exert much the same influence. We could have here an exhibit which would be national in character.

Michael Sullivan thought that at Chicago the horticultural

feature was the most prominent part of the exposition. He said that Boston had the foundation for one of the finest World's Fairs and suggested that a marine and inland exhibit might surpass all former fairs.

President Hadwen asked if the lecturer could give a few points on matters that are essential to the adornment of rural homes at a small expense.

Mr. Manning answered that one thing of importance was that the lawn space should be taken advantage of; that it should not be broken up by scattered shrubs but framed in rather by a wall of shrubbery. Floral displays should be in flower gardens into which one could step from the house, rather than numerous small beds. Masses of flowers, too, are more effective than dozens of different varieties in smaller quantities. The main object is to make an attractive scene in which no one feature is too conspicuous. The house itself should be connected with the surrounding grounds by planting around the foundations. Uninteresting features should be shut out by shrubbery. There should be a preservation of natural existing conditions, though these are sometimes looked upon by the owners as undesirable. Trees and shrubs already on the land may be better suited to the surroundings than anything else could be, and are often better left standing than removed. Irregularity of surface is often an element of beauty not found in smooth lawns. In planning home grounds one should be largely governed by existing conditions.

In making plans for the house the question of the view should be taken into account and the rooms most used should have the best outlook.

William C. Strong thought our Society had had as great an influence on the public tastes and opinions as a world's fair would give and emphasized especially the strong though quiet influence on the community, through so many years, of our Saturday exhibitions and of the work of the Committee on School Gardens and Children's Herbariums.

On motion of Edwin A. Hall a vote of thanks to the lecturer was unanimously passed.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 15, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE EVOLUTION OF VEGETABLE CULTURE DURING THE LAST FORTY YEARS.

By WARREN W. RAWSON, Arlington, Mass.

By evolution we mean progressive development, and I doubt if there be any other branch of business in which this progression is more pronounced than in the culture of the various vegetable crops which have been grown for market for the past forty years. This advancement has been made in many ways, namely, the introduction of new varieties, the improvement of old varieties, the greater intelligence in the use of fertilizers to enrich the soil and thus increase the production, the improvement of farm machinery and the methods of cultivation, and the introduction of glass houses for the forcing of crops during the winter months.

Forty years ago the cultivator of the soil had to depend largely on his own exertions and experiments to attain success, but how different today! Agricultural Colleges exist in every State, whose object is to instruct him in the culture of all crops; the amount of literature pertaining to agriculture has increased enormously; and active horticultural and agricultural societies have been formed in nearly every community for the exchange of ideas, thus enabling him to benefit from his neighbor's experience and vice versa. But with all these advantages of today there must be coupled, to ensure success, the same energy and application to work that then existed.

We have learned that it is possible to produce three crops where only one could be obtained heretofore. This has been brought about by more thorough cultivation and the application of such fertilizers as will bring the soil up to the required standard.

Great strides have been taken in agricultural chemistry during the last forty years. Now we can tell by analysis the exact

amount of the essential elements, namely, nitrogen, potash and phosphoric acid in the soil, and if one or two are deficient for the successful production of the crop they can be supplied. There are special fertilizers prepared composed of a greater or less proportion of the above named elements according as the various crops require, as lettuce fertilizers, cabbage fertilizers, etc.

Stable manure was the fertilizer used then and sold for four to five dollars a cord, but now it can be bought at the stables for one dollar a cord, the reduction in price being caused by the greater use of commercial fertilizers instead of the manure. However, many of the successful market gardeners of today stick to the old way, feeling that it is the surest and best, and use large quantities per acre, perhaps three times the amount used forty years ago. That does not imply that three times the crop is produced, for it is evident that more dressing would be required to produce a crop on old land that had been used for that length of time than it did then. Nevertheless, it is a fact that some of our best and quickest crops are produced on this same land that has been used year after year.

The improvement in machinery has been so great that one man and one horse can do the work that required many, forty years ago; thus the expense of production is greatly diminished.

The climate has so changed during the past four decades that crops which were very successful then out of doors are almost a failure now. Cucumbers and melons may be cited as examples. Then we had spring, summer, autumn and winter, but today the seasons are more or less mixed up and often in the summer season we have weather that will not permit the two crops mentioned to live out of doors and they are therefore grown under glass.

Glass had just begun to be used forty years ago and I remember one man who had five hundred sash and everybody thought it was an enormous amount, but today they are few who have as small a number. After the sash came the glass houses, and these have been enlarged and perfected to such an extent that today the growing of vegetables under glass has become a specialty and crops have attained a perfection unknown forty years ago. Acres are covered with these glass houses heated with steam or hot water and the cultivation of the same has developed into the most important part of market garden business.

Four crops can be produced in a year, three of lettuce and one of cucumbers. It would be difficult to estimated exactly the cost of production of each cucumber or of each head of lettuce in a house but we can safely say that it is at least one-half that of forty years ago. They do not sell for as much in the market as the supply is greater in proportion to the demand, but more can be sold at a moderate price and a fair profit obtained from the whole crop.

Much of the land cultivated forty years ago is too expensive today to grow crops on and the growers are moving away to a greater distance from market where land is cheaper and taxes less.

It is the same in the market garden business as in many others, in that goods are produced in greater quantity at a less cost of production and sold at a smaller percentage of profit than forty years ago. What some of the market gardeners of today spend for luxuries would have been considered a good profit then. The general mode of living has changed greatly. Now the market gardener has his pair and fine carriage while forty years ago he went to church with one of the farm horses. Now he has two or three weeks vacation in the summer; then he toiled the whole year round. His boys had to work when not at school and now they do as they please. In fact the market gardener of today is classed as an up-to-date business man. He works more with his head than with his hands. He plans the work for others, keeps informed every day of the condition of the market, as to its prices and the supply and demand, knows all about the new seeds and machinery introduced, and in every way endeavors to get the greatest amount possible out of his land.

One of the most vital phases of this evolution of market gardening is the improvement of old and introduction of new varieties of vegetable seeds. Forty years ago most of the market gardeners grew their own seeds or exchanged with their neighbors, that is, one man would grow one kind and exchange his surplus with one of his neighbors who had a surplus of some other variety. There were only two or three seed stores in Boston at that time but today there are three times as many and many of the market gardeners buy large amounts of seed of New York and Philadelphia houses.

The seed business of today is one of enormous detail and is

brought down to a system that was not dreamed of forty years ago. The seedsman knows what is the very best locality for every crop and sends his stock seed to a grower in that locality whom he knows makes a specialty of that particular variety. For instance, we get our peas and beans from different sections in Northern New York and Canada, our vine seeds from Michigan and several states in the West, our onion seed from California and Connecticut, and our radish and spinach from Germany, where we also get the greater proportion of our flower seeds. By this system better seeds are produced at less prices and the seller, knowing the origin of the stock, can tell what the crop ought to produce under ordinary conditions.

All fertilizers are now required by law to have a correct table of analysis on every package or bag, that is, the different percentages of each element that they contain, so that the buyer can tell just what he is buying. Only by practical experience can he tell what kind and how much of that kind his land needs for the very best results. Only he who has given it the closest study realizes how true it is that different crops require different treatment and different fertilizers for different tracts of land.

Then there are new insects coming up every few years and creating havoc among the market garden crops, and to learn how to successfully cope with these is another chance for study which was unknown forty years ago. If the market gardeners had known as much then about the numerous things I have mentioned as they do now, many of them would be millionaires.

Probably the most interesting phase of the evolution of market gardening during the last forty years is the study of the changes and improvements made in the different kinds and varieties of vegetables. I can remember many of them myself, but having access to some old Boston seed catalogues of that date, I am able to trace them more clearly. I will take them in alphabetical order and speak of some of the principal ones.

Asparagus.—This crop is much the same as it was then but cultivation has improved it very much. Probably Mr. John B. Moore of Concord did as much for the improvement of the asparagus as any grower and we are now growing and selling Moore's Cross Bred in preference to many other varieties. The town of Concord

is today the principal locality where this very fine vegetable is grown. It can be forced to some extent.

Beans.—More changes have taken place in the bean than in any other vegetable. This is especially true of the dwarf or bush variety. Forty years ago we did not know the wax variety which is the most popular type today. This was introduced about thirty years ago. The Golden Eye Wax is about sixteen years old and was brought out by one of our Boston seedsmen and sold to other seedsmen for stock at ten dollars per peck. Undoubtedly the most popular wax bean today is the Kidney Wax which is catalogued under various names. It is a very tender variety but quite difficult to grow on account of its tendency to spot or rust. This is especially true in a wet season when it is almost impossible to prevent the rust but in a dry season very little will appear.

The Mohawk, Six Weeks, Valentine, Red Cranberry and Dwarf Horticultural are about the same as forty years ago. There are today quite a number of varieties of the Horticultural which sell under various names, one of the most prominent being the Goddard or Boston Favorite. Next to the Kidney Wax the Horticultural Wax and Valentine Wax are the most popular of the wax varieties. The Brockton Pole, introduced in 1884, as well as the Worcester Pole, of more recent introduction, are great favorites as pole varieties. There are a number of varieties of Lima Beans both pole and bush, the old Sieva Lima being the forerunner of this type.

Beets.—I can well remember the introduction of the Dewing's Beet by its originator, Mr. Dewing. The seed was in great demand at that time, which was about thirty years ago. We have had many improvements since then, the most popular ones being the Favorite, Edmands, Detroit Dark Red and the Crosby Egyptian. The last mentioned is the best early and forcing variety and was introduced by Mr. Josiah Crosby about twenty years ago and has held the reputation of being the best early beet ever since. The seed used to sell for two dollars and a half per pound but today the genuine article costs one dollar per pound.

For second early varieties the Favorite and Edmands are selected and the same for late. They are both distinctly blood beets of good shape and not very large. The long beets that we used to see in the markets are seldom seen now. The seed is sown how-

ever for beet greens as it produces a dark red leaf and is very prolific.

Cabbage.—As to the cabbage there are quite a number of the varieties which were popular forty years ago that are still in demand today, such as Early York, Wakefield, Winnigstadt, Drumhead, Flat Dutch and Savoy. These of course have been greatly improved by culture but they still posses the same characteristics they had then. The most prominent of the newer varieties are the Early Spring, Early Summer, Stone Mason, Drumhead Savoy, All Seasons and Danish Ball Head.

Only the green worm and maggot affect the cabbage but when grown in large quantities the worm does not bother the crop much, and if grown on new land the maggot can be avoided.

I think there is no crop that I have mentioned or shall mention where there has been a greater change in market price than in the cabbage. We used to get ten to fifteen dollars per hundred while today five to six dollars is the top price. There is some profit in them at this price for we grow many more of them and can grow them cheaper but not for one half what we did forty years ago.

Celery.—This crop has grown as much in popularity as any on the list. The varieties have changed greatly, in fact not one of the varieties that were popular then are in use today. There is also a vast difference in the cultivation. We used to grow a branching celery but now the market demands a solid heart. Then the rows were six feet apart and one foot apart in the row, but now three feet apart and six inches in the row are the proper distances. So that now we have to use four times as many roots as formerly but we do not get as much return for every acre of land.

The introduction of the Paris Golden variety made a great revolution in the celery market but not for the benefit of the producer. This is a self blanching variety, grows very readily on new land and is popular for the early market. But when the Giant Pascal and Boston Market varieties appear on the market the Paris Golden sells at a discount. I sincerely believe that if we had never seen the Paris Golden celery we would be better off, for the other would bring enough more to make up the difference.

The celery crop is one that requires a large amount of labor and is not in many cases a very profitable crop but it serves the purpose of keeping the men at work during the fall and winter and to

occupy the land as a second or third crop and thus help to make business if not profit.

There is not much difference in the cultivation of the late varieties. They are bleached by banking the earth up around the plants. The first banking is accomplished by the help of the celery plow, but the second banking has to be put up with shovels. A greater part of this late celery is put into pits and kept for winter use. When kept till spring it will bring a high price, but as it takes a greater number to make a dozen in late winter or spring there is more profit in selling it in the fall at one dollar per dozen than in spring at two dollars.

Corn.—Great improvements have been made in the varieties of sweet or sugar corn and much larger quantities are raised as compared with the early sixties. Adams' Early and Evergreen were the two principal varieties then. Now we have Early Crosby, Early Cory, Marblehead, Moore's Concord, Potter's Excelsior, Black Mexican, Mammoth Sugar and Stowell's Evergreen. All of these are fine in quality and are grown in different sections in different seasons and are in the market from July 1st till frost comes. As to the cultivation of the sweet corn we employ practically the same methods as were in vogue forty years ago.

Cucumber.—This is one of the best known vine crops and was grown almost wholly out of doors forty years ago and very little under glass while now it is just the opposite. This has been brought about by the change in the climate which renders the outdoor crop very unprofitable as a rule. The cucumber is now grown all the year round in houses made for the purpose and it is generally considered to be one of the most valuable crops for the market gardener.

We have many of the same varieties now that were known then but they have all been greatly improved. The Improved White Spine is the most generally grown and is the best variety for market. The cucumbers are started in a house after a crop of lettuce has been taken out. The vines are trained upon trellises made of slats and wire so that the fruit will hang down and thus be very easily picked. The bees are put into the house when the blossoms appear and in two weeks from that time the first fruit will be picked, that is, in the spring or summer months when the

temperature will run as high as 100° in the day time and 70° at night.

Forty years ago we used to get as high as fifty cents apiece for cucumbers but not a very large quantity could be sold. Today large amounts are sold for ten to twenty cents each, but the time when they pay the best and when we get the most out of the crop is when they bring from five to fifteen cents. Then we can sell them by the thousand. Many of them are shipped to New York and other large markets and this makes the demand very great. I have known of one market gardener who picked fifty thousand in one day and sold them in our market at four to five cents each. This was in the month of June, 1895. The cucumber crop is a very expensive one to grow as it requires so much care and heat. The coal pen grows lower very fast in cucumber time.

Lettuce.—This crop has been improved and the sale increased as much as any I can name. It is not only grown in the field but also under glass and may well be termed a continuous crop. The headed varieties are called Boston Lettuce all over the country, for the market gardeners of Boston and vicinity have done more than any others to bring these varieties up to their present highly developed type. Many times the quantity is produced today than was grown forty years ago. The varieties are much larger in size: five to six dozen filling a barrel now whereas it would have taken twice as many then.

The plain Hothouse and Crumpled Leaf varieties are grown under glass, and the Black Seed Tennisball, Big Boston, and Salamander out of doors. Lettuce is grown by the acre both in the field and under glass. In the house it will grow best in a cool temperature and a slight frost may not injure it.

Like many others the price of this crop has been greatly reduced and sells for about one half what it did forty years ago, but it is produced at a much less expense and sold in much larger quantities.

Onion.—This is one of the standard or moneyed crops of the market gardener. Years ago the seed only was sown but today those who wish to have another crop on the same land come off earlier, set out a small onion, which was raised the season before and kept through the winter, and thus they can produce a crop about a month earlier than from the seed. In this way a better

crop of celery for a second crop can be produced. The maggot has troubled the seed crop so much of late years that it is safer to put out the sets. There has been very little change in varieties the past forty years and the Yellow Danvers is still the leading variety as it was then.

Peas.—The varieties grown forty years ago were few compared to the great number now in use. All we have left of that time are the Daniel O'Rourke and Champion of England. Neither of these is very popular now.

I will not go into detail as regards the introduction of our leading varieties of today but will mention only some of the best for the market and for the home garden. The earliest pea is the Clipper, next the Nott's Excelsior, then comes Gradus, the newest or all. This is a fine market variety but does not yield as well as some of the others. McLean's Advancer for eating is the best of them all and is also a very good cropper. American Wonder is a very dwarf variety and for the home garden is one of the best. In quality it is the same as the Nott's Excelsior. The Stratagem is one of the best late varieties.

Of late years peas have not been grown extensively by the market gardeners about Boston as the destructiveness of the pea louse and the cost of picking have rendered them an unprofitable crop.

Radish.—For many years the long scarlet radish was the most popular but of late years the globe shaped variety is in greater demand. They are grown very easily and large quantities can be produced from a small tract of land. Very few of the long radishes are seen in the Boston markets now.

Rhubarb.—This is both an outdoor and a forcing crop. When forced and put into the market in winter and early spring it brings a very good price. When grown under glass it is quite productive. Very little, if any, was forced forty years ago but quite a lot was grown out of doors as we grow it today.

Squash.—The oldest of the present varieties are the Marrow, Hubbard, Crookneck and Scallop. These were all popular forty years ago and are still grown quite extensively today. Many new varieties have been introduced, two of the most prominent being the Essex Hybrid and Bay State, introduced in 1879 and 1886 respectively. They are the same in quality, are large producers and can be used for fall or early winter. The Hubbard for a late

keeper has held its own though it is not so prolific as some of the other varieties. The old Canada Crookneck is seldom seen in our markets today nor is the old time pumpkin, but there is a small sugar pumpkin, that is grown to some extent.

The method of culture is similar to that of forty years ago but today we have more insects to contend with. The change of climate also makes it difficult to grow squashes today. The past few years they have paid very poorly. When we get a good crop, they bring nothing; when we get a poor crop the price goes up, but it makes no difference what the price is if we have none to sell.

Tomato.—The past forty years have witnessed a great many changes in this crop not only in varieties but in many other respects. The Boston Market was very popular a number of years ago but very few are grown today as there are many earlier and better varieties. The Essex was an old variety and was introduced in 1860, the Essex Hybrid in 1873 and the Early Comrade in 1892. All of these were smooth, round and of a light pink color. The Acme, Paragon, Emery and General Grant are all smooth and of a bright red, as also are the Puritan, Stone, Belmont and Livingstone varieties of a more recent date. The Dwarf Champion is a popular variety on account of its bushy growth, thus enabling close planting for garden purposes.

Many years ago there were quite a number of canning factories located in the vicinity of Boston that put up tomatoes and bought their stock from the growers in this vicinity, but today there are very few of these factories here. They have moved further out and put up their stock near where it is grown for them by the farmers who sell their whole crop by contract. This is an improvement in one way as they get their tomatoes fresher and put them up in their proper season.

There is probably no vegetable grown that has increased as much in consumption as the tomato. It is on the table all the year round and no dinner seems complete without it. Tomatoes grown under glass are selling today for fifty to seventy-five cents per pound. Some are better for this purpose than others. The Lorillard is the best of these. The plants are started in the summer and come into bearing in the fall after the outdoor crop is done and continue to bear throughout the winter.

I have noted many changes in climate, crops and methods of cultivation but there is one thing in which there has been no change during the last forty years, except that resulting from higher cultivation, and that is the land itself.

There are today acres and acres of uncultivated land at a reasonable distance from market that will produce good crops, perhaps not as quickly as on our higher cultivated lands, but of a higher standard and better keeping qualities.

To these uncultivated lands I advise the young men to go, and, it they have a liking for and a knowledge of the business, they are sure of success. I am speaking from my own personal knowledge of men who have gone into the cultivation of vegetables during the past ten years. Nearly all are making a success of it and they constitute the best class of business men to deal with as you are practically sure of your pay.

They have to employ more capital than forty years ago but as that same capital can now be hired at a much cheaper rate of interest they ought to do as well, if not better, providing they attend to their business and work intelligently. By this I mean that they must learn what crops are best adapted to their land, also the demands of the nearest market, and then devote their whole time to these few crops and grow them in quantity. A market gardener will do better if he be located near a large city at a distance from Boston or New York than if he caters to these two cities alone, for the reason that so much southern truck is now sent to Boston and New York that these markets are often demoralized, whereas as outside market will afford a good trade and a steady price. Thus the market gardener is sure of his market but in order to be successful in the true sense of the word he must have a constant supply on hand and ready to market all the time so as to be able to take advantage of the market when it is at its best.

We are living today in an age of improvement and the vegetable business can well claim a prominent place amongst those industries in which the improvement has been the most marked. I have shown where many changes have taken place in all departments of vegetable culture. New ideas have been introduced whereby the cost of production has been reduced, while the production itself has been increased. The climate has changed thus rendering some crops unprofitable. Labor has been cheapened by

the introduction of machinery. The introduction of glass has made what may be termed a continuous season. Electric lights are now used to force a crop and are a success. Sterilization of the soil is practiced with a view to destroy all vermin, weeds and everything that is injurious to the crop, and is a great benefit, for now we can grow such crops as lettuce and cucumbers without the fear of their being destroyed by the fungi which heretofore had caused so much damage.

When we consider how great has been this progressive development it is no wonder that we would rather have 1902 with all its blessings and luxuries than 1862 with its hard work and old-fashioned methods. None of our profession have became millionaires but nearly all are well to do. They are very independent, live as well and as long as any other class of business men, and are the leading men in their respective townships. They have more time to themselves and get more good out of life and in all respects are much better off than the market gardeners of forty years ago. I do not know of a single thing that is not an improvement over the old times. Many of us love to look back and think of those old days but none of us would wish them back again. With the opportunities of the present day, I know of no other business whereby one can get greater pleasure than in market gardening providing he takes a sincere interest in it. I do not believe in a man engaging in a business to which he cannot devote his whole heart and soul and to which he is not adapted, but for a man who takes a liking to it, there is no business in the world so fascinating as the cultivation of vegetables for the market.

Discussion.

William C. Strong referred to the lecturer having said that electricity was now successfully employed, and asked him if he would state to what degree it was successful.

The lecturer said that he used the arc light and always had found it beneficial, crops being more luxuriant and maturing more quickly where it was used. He said that he used it up to one o'clock, A. M., the time when the current was turned off. He did not think it would injure the crops to use electric light even longer than that.

Varnum Frost disagreed with the speaker as to the use of electric light and thought the plants needed some rest. He thought many farmers who did not use electricity had quite as good results as those who did. He said that electricity gave light but not warmth, and that it was high temperature which made plants grow. He suggested that, if electric light *is* so beneficial, there should be remarkably luxuriant grass, shrubs, etc., around our street lights which burn all night. Mr. Frost said that the lecturer had spoken of certain crops which failed. He thought many could remember the time when these crops, fruit especially, did not fail. Forty or fifty years ago pests and blights which trouble us now so much did not exist. He thought, judging from the success farmers formerly had with their crops, that they knew *something* then, and he said that he considered farmers of today less prosperous than those of forty years ago.

Michael Sullivan thought that comparing the farming of forty years ago and that of the present time was like comparing the modes of transportation then and now. He said that if the farmer of forty years ago, with his knowledge, could have had the market we now have, he would have become independent in five years. We have everything to contend with now. A box of strawberries, for instance, can now be had for twenty-five cents at a season when, formerly, we could get twenty-five cents a berry. Cheaper transportation brings all kinds of produce to us continually, making competition much closer. However, there is still a good living to be had from farming, in New England, and young men would do well to take some of the lands now standing idle, put in fertilizers and prepare the land for the crop to be grown; then, if there were good roads, making it easy to get to market, they would succeed.

New England is neglecting the production of apple and pear trees. The injurious insects, etc., which have been spoken of, should not be so great a bugbear. It is quite a simple matter to spray with Bordeaux mixture, which is a remedy for many evils of this sort. One must, of course know when and how to apply the mixture.

The great trouble with market gardening seems to be the market. It is very hard to foresee just what crops to raise. Most farmers overdo some crop. They are very apt to raise some par-

ticular thing simply because other farmers do and then the market becomes overstocked. They must learn to study conditions and demands.

At the close, it was voted, on the motion of George D. Moore, that the thanks of the Society be presented to the lecturer for his very interesting paper.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 22, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered under the auspices of the Massachusetts State Board of Agriculture:

BIRDS AND INSECTS IN THEIR RELATION TO AGRICULTURE.

By E. H. FORBUSH, Ornithologist to the Massachusetts State Board of Agriculture.

The number of species of insects on the globe is vast and that of the individuals is beyond comprehension. It is greater by far than that of all other living creatures combined. More than three hundred thousand species have already been described and there are many thousands of undescribed species in museums. Dr. Lintner, the late distinguished entomologist of the Empire State, considered it not improbable that the number of species would reach one million. Each of these species is enormously productive and it is undoubtedly true that were the progeny of one pair of insects allowed to reproduce without check, it would soon cover the entire habitable earth.

The Rocky mountain locust in its flights filled the air and hid the sun. From the high peaks of the Sierra Nevada it has been seen filling the valleys below and the air above as far as a powerful field glass could bring the insects within focus. The chinch bug covers the corn and grain fields in countless millions over towns, counties and states. The army worm moves at times in solid masses destroying the crops in its path.

The voracity of insects is almost beyond belief. Dr. Lintner says, "A certain flesh feeding larva will consume in twenty-four

hours two hundred times its original weight." There are vegetable feeders, caterpillars, which during their progress to maturity within thirty days, increase in a size ten thousand times. To reach this remarkable growth a man at his maturity would have to weigh forty tons.

In view of such facts, it will be seen that insects, by reason of their enormous multiplication and great voracity, may become far more dangerous to crops if unchecked than larger and more powerful animals.

It may be truthfully said that this country suffers far more from the depredations of insects than any other. And this is to be expected, in view of the methods employed in agriculture in this country, and the conditions under which it is here conducted.

A considerable proportion of the fertile land in America is still uncultivated and there are vast tracts in which insects can breed unmolested until they exhaust their feeding grounds and overwhelm the surrounding country, as in the case of the migratory locusts. In the settlement and development of a new country man at once begins to disturb the long established relations between living organisms. In a forest country the woods are cut off, the larger birds and mammals are exterminated or driven away, and great disturbances occur in the economy of nature as a consequence of these changes; new plants are introduced and with them new insect pests are brought in from other regions or from foreign countries. As civilization advances large areas like the great grain farms of the northwest, the orange groves and vineyards of California and the great orchards and potato fields of other states are devoted to special crops. These tracts offer great quantities of desirable food and thus stimulate the reproduction of insects to a remarkable degree. The spread of imported species to the very confines of civilization is accelerated by an ever increasing traffic on newly constructed highways and railways, and, as these imported insects escape most of their natural enemies by being brought to this country and find more favorable conditions awaiting them here, their fecundity and destructiveness are increased in undue proportion even to their increased food supply. Such are the cabbage butterfly, the wheat midge, the Hessian fly, the gypsy moth and others. Native species which were harmless to agriculture under natural conditions in the wilderness sometimes

take advantage of the introduction of a new and succulent food plant and follow it back from the frontier into the agricultural regions, spreading over the whole country and causing widespread injury to a staple crop, as did the Colorado potato beetle. As the country becomes settled and the ravages of insects increase, the settlers, instead of endeavoring to protect and foster the useful birds that were designed by the Almighty to dispose of the surplus insect production, pursue them with the gun and poison until the large useful species are nearly if not quite extinct. The wild turkey, grouse, prairie chickens, wild pigeons, ducks and geese, plovers, wood-peckers, blackbirds, larks, robins, and all birds which are "good for food" are slaughtered relentlessly and without quarter even at the season when the callow young must perish from starvation. The grasshopper-eating buzzards and all hawks and owls are shot at sight, anywhere and everywhere, by all classes of people. Many States offer bounties on the heads of supposed noxious birds, without being aware that such a policy is undermining the agricultural interests. Small birds are hunted for their feathers; bird egging boys increase apace; a million cats forage the fields and woods; fashion calls for millions of birds to deck the ladies' headgear. In the meantime insects increase and run riot. The locust, the chinch bug, the army worm, the codling moth, the plum curculio, the cabbage butterfly, the boll worm, the asparagus beetle, the canker worm, bugs, beetles, aphides, borers, grasshoppers and other insects destroy the ripening grain, sap the lusty fruit tree, devour its leaves, despoil the garden, field and forest and render the life of the successful farmer one continual battle with his insect foes. During the locust invasions in the west hundreds of small farmers lost their all and becoming destitute were forced to leave all they possessed and remove to more favored lands.

In 1854 the loss occasioned in New York State by the wheat midge (*Diplosis tritici*, Kirby) was in excess of fifteen million dollars.[1] The value of wheat and corn destroyed in Illinois in 1864 by the chinch bug (*Blissus leucopterus*, Say) is estimated at seventy-three million dollars.[2] The loss in the four States of

[1] Estimate given by Dr. Fitch, State Entomologist.

[2] 1st Annual Report of Injurious and Other Insects of New York State, By Dr. J. A. Lintner, Albany, 1882, p. 71.

Kansas, Nebraska, Iowa and Missouri, during 1874 from the ravages of the Rocky Mountain locust is estimated at one hundred million dollars;[3] while the annual loss caused by insects in this country is said to be from three to four millions.[4] What wonder then that the farmer is taking desperate means to protect his crops! What wonder that deadly poisons disguised as insecticides are scattered by the ton over the foliage of many of our most important food crops, and that the experiment stations are continually searching for means to quell the annual or periodical raids of insect pests. And yet, strange as it may seem, the most distinctly visible and noticeable of all the influences provided by nature to prevent or control this insect surplus is almost wholly ignored, or worse, neutralized, by the people whom it seems especially designed to benefit. The land birds, that are by their structure, by their habits and preferences especially adapted and designed to consume great quantities of insects are not encouraged, fostered, or protected, but are pursued and slaughtered without mercy. Many of them are regarded as nuisances and pests and their services to agriculture are either entirely ignored or strenuously denied. Now let us look at this question of the utility of insect-feeding birds in the light of reason. There are absolutely no other creatures upon this earth that are so well fitted for searching out and destroying most kinds of insects in all places and at all seasons, over wide area as are the land birds and especially the smaller species. Wherever they are sufficiently numerous they will exert a strong influence for the suppression of any undue multiplication of insects. The very minute insects are all that are likely to escape.

A few of the reasons why birds are useful in checking insect invasions are obvious.

1. Birds by their powers of flight and telescopic visions are admirably adapted to search for and to find food over large areas, as well as for a sudden and swift pursuit of it and an unerring descent upon it when found.

2. The young of most land birds require a great quantity of insect food for their perfect development and, therefore, are raised at a season when their insect food is most abundant.

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[3] 1st report U. S. Entomological Commission, 1877, p. 121.

[4] Report U. S. Dept. of Agr. 1884, p. 324.

3. During this season the parent birds go to those points where insects are numerous that they may easily secure a sufficient supply for their young.

Hence birds gather in numbers wherever great insect outbreaks occur and not only destroy many insects themselves but feed still more to their young. This gathering continues from season to season until the noxious insect is so reduced in numbers that it is lost to common observation.

The full fledged birds are to a certain extent omnivorous and are thus able to subsist when insect food is difficult to obtain. In winter certain birds are quick to find those localities where the eggs of insects are plentiful.

It is at once seen how well certain families of birds are fitted for the pursuit and capture of certain families of insects. The thrushes dragging unwilling cut worms and grubs from the ground; the ground sparrows gleaning among the leaves and undergrowth for ground beetles; the woodpeckers drilling into the trees for borers; the creepers, nut hatches and titmice searching every crevice and cranny in the bark of the trees, extracting the hidden grubs, eggs and caterpillars; the warblers, vireos and wrens searching the twigs and foliage of plants and trees for the wary insects hidden there; flycatchers, bluebirds, swallows, warblers and swifts, cleaving the air in all directions and snapping up their flying or perching prey; the hawks and bitterns destroying grasshoppers; the owls, night hawks and whippoorwills noiselessly flitting about, pursuing the large night-flying moths, beetles and mosquitoes; all give evidence of perfect adaptation to the pursuit and capture of the insects on which they feed.

Birds of many species follow locust invasions and gorge themselves to repletion. It is a well known fact that birds assemble wherever the larvæ of moths, appearing in great numbers, strip the foliage from the trees. Birds quickly discover such localities and at once resort to them, seeking them as magazines of food supply for their young. I have observed blackbirds flying half a mile over the meadows to a spot where larvæ were plentiful, returning after each visit with caterpillars in their beaks, to feed their young. They seemed to prefer to travel this distance to a point where food was plenty and easily obtained rather than to search for it in the immediate vicinity of their nests. An orchard infested by canker

worms is visited by birds from far and near and the outbreak is generally checked in one or two seasons, if birds are sufficiently plentiful in the neighborhood. The amount of insect food which young birds will consume is not generally understood. Mr. E. W. Wood of Newton, a well known member of the State Board of Agriculture, informs me that during one season when the spring canker worms (*Anisopteryx vernata*) became quite numerous in his orchard, a pair of Baltimore orioles appeared and built a nest near by. In the meantime they fed daily upon the canker worms. This they continued to do so assiduously that by the time the young were hatched the numbers of the worms were considerably reduced. The birds then redoubled their diligence, carrying ten or more worms to their nest at once. Soon the canker worms in that orchard were a thing of the past. The foliage and fruitage were saved for that and succeeding years. Audubon says a woodcock will eat its own weight of insects in a single night. Samuels quoting from the experiments of Professor Treadwell shows that it was found necessary to feed a young robin forty-one per cent more than its own weight of worms in twelve hours to assure its healthy growth and development. It was found that the bird would consume nearly half its own weight of beef in a day. A man at this rate would eat about seventy pounds of flesh daily. Should a pair of robins have four half-fledged young to provide for, each parent would be obliged to secure a worm or its equivalent every five minutes, for at least ten hours each day, to supply the young with needful food. Wilson Flagg found by experiment that young robins required only insect food and remained healthy and vigorous on that alone. What is true of the young of a robin is undoubtedly true of the young of many other birds. Dr. Brewer says that a pair of jays feed their young five hundred thousand caterpillars in a season. Anyone who will watch robins, wrens, cuckoos, jays, woodpeckers and other birds, while they are feeding their young, will become convinced that the number of insects destroyed by birds is beyond calculation. Many birds eat the eggs of insects, and Dr. Brewer says a pair of jays will destroy a million eggs every winter.

The lecturer next took up the different families of birds in detail, illustrating his remarks by lantern slides of many of the more common and useful birds. This part of the lecture being

interspersed with references to the illustrations cannot be properly reproduced without them. Among the birds mentioned as particularly useful to agriculture were the vireos, sparrows (excepting the English sparrow), the swallows, tanagers, woodpeckers, chickadees and nuthatches. The crow and the robin were regarded as useful or injurious according to circumstances. The lecturer closed with some remarks on the usefulness of the migratory birds, with illustrations of their haunts both north and south, in cultivated lands and in the wilderness.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 29, 1902.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered under the auspices of the Massachusetts State Board of Agriculture:

SOME FAMOUS GARDENS OF THE WORLD.

By MISS HELENA T. GOESSMANN, Amherst.

Abraham Cowley, an old English writer of the seventeenth century, in writing of Agriculture and kindred subjects, says "God the first garden made, and the first city, Cain." A little later, in one of his books or essays entitled "Agriculture", he says, "The three first men in the world were a gardener, a ploughman and a grazier; and if any man object that the second of these was a murtherer, I desire that he would consider that after he was so, he quitted our profession and turned builder." So one sees, even in these whimsical, witty, humorous impersonations of Cowley, the tribute to the occupation of the gardener, the tiller of the soil, the planter of flowers.

The two greatest events of Christian history are associated in our minds with garden lore and garden life; the beginning of man's history in the Garden of Eden, and the beginning of the tragedy of the New Testament in the Garden of Gethsemane. Solomon in his song says, "A garden enclosed is my sister, my spouse," and Homer in the Odyssey eulogizes the beauty of

his garden where the ripe grapes hang down and the scent of the flowers makes the day joyful; where the work of man and the work of the Creator are one. Plato, you know, thought out his philosophy in a garden embowered in thyme and surrounded by fountains and walks, and when the people of his native city objected that the location he had chosen was unhealthy and wished him to live nearer the *Kathemnia*, he said, "I have my garden and in my garden I can think."

Xenophon tells us that when the Greeks sent an ambassador to Cyrus with gifts, he found him in his garden, and not only was Cyrus delighted with his garden, but he took great pride in showing the ambassador about and pointing out trees and plants which he had placed in the earth with his own hands. Aristophanes received inspiration from his garden, and here were probably suggested to him some of the pictures he gives us concerning the political personages of his time. Pliny the Elder eulogizes garden life; Pliny the Younger describes his own garden, where the water flowed down in cascade form, and marble images presided over a circular basin always full but never overflowing. Here he tells us that he ate his midday meal and the dishes of food floated in china fruits and flowers formed upon the water's surface which served as a table.

Saint Jerome wrote, thought, prayed and dogmatized in his garden, and a Chinese writer of the eleventh century speaks particularly of three flowers peculiar to his country,—the chrysanthemum, the pæony and the lily. He says, "In my opinion the chrysanthemum is the flower of retirement and culture; the pæony, the flower of rank and wealth; and the water-lily, the Lady Virtue *sans pareille*."

Petrarch speaks of his Garden of Apollo, all light and brilliant with flowers and fountains. Here he spent the merry hours, the hours of social exchange of the day; but to his Garden of Bacchus, almost strictly classic and secluded, he retired for his hours of composition and study.

Boccaccio, in the fourteenth century, praises the garden, and Erasmus, in the fifteenth century, suggests a scheme of color, simply anticipating in a way, Alfred Austin, who says that "exclusiveness in a garden like exclusiveness in society is a great mistake."

Sir Thomas More in his writings, and Montaigne in his essays advance the same views, and Sir Francis Bacon suggests that every gardener should have his garden arranged in a succession of blooms so that each month of the year should have its wealth of blooming flowers peculiar to the season, and thus never present an appearance of desertion.

Milton, in the seventeenth century, who learned so thoroughly the truth of his own philosophy, "They also serve who only stand and wait," speaks of this same lack of system in the gardens of his country. Alexander Pope in his letters similarly arraigns the English garden makers for the lack of harmonic simplicity. Yet not so many years later Byron blames Milton and Pope for the confusion of the average English garden. He claims that the English have destroyed their forests, have gone away from the beauty of nature and have made fashionable a stereotyped form of garden for the public, and he thus blames these two men who were all their lives discussing this lack of system. Pope had as a gardener John Serle, who passes into fame through the history of the garden at Twickenham; the garden which was a wonderful study, yet it seems rather an amusing thing to think that Pope should ask for classic simplicity, when from five acres he evolved such a garden that people thought him the owner of twenty-five. It was a series of labyrinths and fountains, and at the close led up to the loved tomb of his mother.

One always thinks of and sees England as a country of gardens. The quaint Hampton Court Gardens, surrounding the palace itself, a creation of the time of Henry VIII, with its thousand apartments, present an interesting study to the student of architecture; neither palace nor the gardens are materially changed since Henry's time. The latter gives one the idea of the tree arrangement and the box hedges, the combination of the French, the Dutch and the English. One Queen, (I think the wife of George II,) disliked very much the presence of the box hedges and caused all of them to be torn up, rather destroying the Dutch effect; but after her death they were all replanted, and are flourishing today. Then, too, at Hampton Court, in the Maze and in the Orangery, while tracing the work of Kent and the influences of André Le Nôtre, the great French gardener, one gets a liberal study in landscape gardening. However, it is not to the French that the English owe the develop-

ment of their garden system. You have all heard of that good man called "Capability" Brown, who did so much for the English parks. He was always discussing the capability of the earth and the capability of the country, and though his work was filled with mannerisms, he first developed the idea that the woods should be preserved. He had many friends as well as enemies among those interested in the so-called development of the landscape. He was heard to mutter many times before his death, "Oh, Thames, Thames, will you ever forgive me?" simply because he had caused the water of this river to be turned and utilized through the grounds of Blenheim. This was considered by the English of that day almost a desecration of this time honored stream.

However, if one wants to see English gardens in the completest sense, the Isle of Wight is the place to study them. There the traveler finds the richness of the flowers, the general cultivation, the intensifying, as it were, of nature's charms, without the destruction of them. There is one place in New England that gives you a fair idea of the Isle of Wight as one might gaze upon it from Carisbrooke Castle, and that is the view looking northwest from Mount Tom, with the patches of cultivation, the river, the roads and the farm homes. I never see that view in high summer without wanting to close my eyes and transport myself back to some pleasant weeks spent in the Isle of Wight. The poppy which with us is a cultivated flower, grows wild on the Channel Isle and the vast fields of yellow wild mustard in combination with the former make a wonderful picture. Here are hedges of thorn and box everywhere and even the simplest little cabins are covered with rich and luxuriant growths of roses many of them being so large and beautiful that you are surprised when they are offered for sale at the door of your coach for a few pennies, the same blossoms you would pay dollars for in our greenhouses. Everybody appears laden with roses. There is not yet, even in its larger towns, a savor of London about it and the preferences of the late Queen for its home life have kept much of the country simplicity there. The court life at Osborne House is like country life. The only mausoleum in the church there (Wappinham Church) is the marble tomb of the Prince of Battenburg, across the top of which lies a long rusty sword. On the hilt was bound a wreath of French forget-me-nots. I asked the care-taker who placed them there

and he said that every day when Princess Beatrice was at Osborne House she and her little family came over two miles and brought a wreath of French forget-me-nots to lay on the tomb of the father and husband, and when she was absent the gardener was instructed to do the same tender office in her name.

There has been no biography, perhaps, better deserved, in the history of the French landscape, than that of André Le Nôtre. He was the man who developed Fontainebleau and Versailles and gave the first impulse which preserved to the country the Bois de Boulogne. He was loved of kings and sovereigns, and his epitaph written by Saint Simon claims that one thing can be written of him; he was never an artist with a price; whenever there was a bit of nature to be developed he would put the same thought into his work whatever the compensation might be. He loved nature and worked for it. You realize the presence of such influence when you spend a few hours in the Bois de Boulogne, you see how from a country untilled and land poorly drained it has been developed into, perhaps, one of the most beautiful and attractive parks in the world. The French garden has never influenced the English garden as the English has the French. The country of France abounds in old fashioned flowers, but the French garden is a garden of continuous artificial effects. You can enter an English garden of a large domain and you are positive of what you will find there; you will find the arbors and the walks and the fountains. When you come to the French garden you turn a little group of trees or shrubbery, and where you expect to find a seat you find a nymph, or where you expect to find a fountain you find flowers, yet when you are tired or weary, there is always a comfortable seat. It is filled with surprises like the country itself.

To get, however, near the land that has made the garden a part of the home, one must go to Germany through Holland. You must come in touch with the Delft and the Old Haarlem spirit; see the fields of hyacinths, crocuses and tulips, and scent their odor in the air. In all the shops these blooming flowers are for sale, and tempt to extravagance the lover of flowers. There was a time in the eighteenth century, when bulb growing was the principal occupation of the Dutch people; when they gave up their speculations of every other kind, and their commercial interests for this. Then people made princely fortunes in the sale of these bulbs. There

is a story told of the almost miraculous escape from extermination of that famous bulb, the *Semper Augustus*. I cannot vouch for the story, but this is it. A merchant owned the last two bulbs of this variety of tulip. He intended to plant them eventually but he wanted all his friends first to realize his unique position, and placed them in a conspicuous place on his desk. He hired a man at one of the wharves to carry a parcel to his office, and the good fellow, not being paid for his services according to his own ideas, when the master's back was turned, put the two bulbs in his pocket thinking they were something good to eat, and then betook himself back to the wharf. He had just eaten one of the bulbs when he was interrupted in his feast by the arrival of his employer, who arrested him, accepting no explanation, and had him immediately put in jail. He had a very difficult task in clearing himself, and when he got finally off all he could say was, "It was a pretty poor onion at that!" They tell you that story often in old Haarlem and claim that from the rescued bulb came all the others of that name now growing in gardens.

When you leave Holland and pass out of the country of dykes, windmills, quaintness and solidity of charm, you come into Germany, and there you find the garden and the home are closely connected. No matter how small and unpretentious the house, there is always a garden, a little trellised arbor and rustic table and chairs at the rear of the house. There the family take their afternoon coffee, the hausfrau sits and knits, the neighbors come in for exchange of gossip and the men rest, smoke, and have their beer while discussing the doings of the day. There is much encouragement for true gardening in Germany. It is one of the most cultivated of lands. Going west, east, north and south it presents a perfect patchwork of gardens. The farmers do not live on their farms; they live in towns or dorfs, and you will find the homes of the people grouped about the church and the casino, while the adjoining country is marked off for farms. There they go during the day to work and return at night, so there is nothing of that isolation that is found in New England where the farms are perhaps miles apart and travel to and from them often almost impossible during some periods of the year.

I was walking one day beside Lake Constance in the Swiss country near Meersburg, where the old castle of the Counts of

Meersburg hangs on the heights above the latter town. One naturally gravitates toward the church yards in the old world villages because sometimes there you find a bit of missing history of the place, and you often learn interesting facts from the care-taker, who seems to know everything of interest in the town. Among the graves there was one with rather an imposing monument. All the rest were marked by simple little wooden crosses. I asked the old man in charge who it was and he said he did not know; probably, however, somebody who had died before his time at the castle above. On the front of this monument was a crest of nobility and underneath the name Elizabeth von Drost-Hülshoff. I thought it would be very interesting to know who she was and why she was buried so far from her native part of the country, her name being of north German origin. After inquiry in Lucerne of people who had been at Meersburg, and learning nothing, I dismissed it. Some months after I was in Münster, the historic capital of Westphalia. Walking one day upon the old ramparts of the city, I came upon a statue of a woman with a quaint peculiar face, very much after the fashion of Mrs. Browning or Mrs. Hemans, the old-fashioned, classic, intellectual face. I looked naturally for the inscription beneath this statue and found the name "Elizabeth von Drost-Hülshoff, erected to her memory by her loving townsmen in appreciation of her worth, merit and ability." I learned there that she was a poet of the people, the German Longfellow of fifty years ago. She was in another sense the Adelaide Proctor of Germany; a poet of sentiment who appealed to the masses, and every German school girl of twenty-five years ago had learned passages of sentiment from Elizabeth von Drost-Hülshoff in the same fashion that our old fashioned school girls learned of her English contemporary. She lived in the old castle in the town of Münster and the castle was now in the possession of her nephew. This information given me willingly was followed by an invitation to drive to her home, which we did. We had to leave our carriage a mile away from the gates of the estate because of the badness of the roads; it being early in the month of a rainy April. When we reached the castle we found her nephew, the Baron von Hülshoff, a quaint old German gentleman in possession and he made us most welcome. What interested me most was the garden which she had planted herself and which was still a beautiful picture from the

windows of her small apartment at the south end of the house. One looked down upon a tiny lake on which floated live swans. There was a rich growth of ferns planted all about; in the front of the garden an arbor and a little rustic coffee house looked most attractive. The whole effect of, perhaps, the four or five acres of garden was the same effect she had arranged in 1830, and the fidelity of her family to her memory had kept that garden just as she had left it. It seemed almost, with her broken lute standing in the corner of the room, her portrait looking genially down upon us from the wall and little touches of her art here and there, that one was justified in imagining that she still lived there, and that her spirit pervaded the place. This was only a typical German garden; and repeated itself by Eder and Danube daily. However, there seemed to be between Hohenheim and Stuttgart, perhaps, the greatest variety of German garden cultivation that is found anywhere. The traveler sees the mountain, the forest, the dell, the cultivated garden, one succeeding the other, a beautiful ideal of scenery, and yet every acre of forest or garden is kept in order.

"Elizabeth in Her German Garden," which we have so enjoyed, is a fair idea of the German garden life and the German inspiration of a garden. However, we are not obliged, as a people, to cross the ocean to find gardens of perfection. We have what nature has given us at Yellowstone Park; we have the Adirondack Mountains, the White Mountains and the Green Mountains; and we have parks such as Central Park and the beautiful gardens of Boston, the Public Gardens.

There was a time when the natives of Massachusetts planted corn that they might cover the graves of their dead and conceal the number from the vigilant eyes of the Indians; and today there are some who wall in their beautiful gardens that they may conceal them from the eyes of the curious. This walling in of a garden is an unholy survival of the feudal days. The progress since that day, in the evolution of gardens, is as great as the progress in any other line of development or work in this country.

Speaking also of the debt one owes to one's native town to assist in making it more beautiful, I have in mind a little village in New England, where was very forcibly illustrated, within a year, the effect of a garden or no garden on the entire community. I remember passing occasionally one house where the poor mother

had little time to think of the plot of ground outside; she had her children to feed and her house to care for. I used to think of this garden as an index to every yard in the street, for they were all of the same character. One day I had occasion to spend a few hours in this village after an absence of months, and passing through that same little street I found that the tenant of this tiny house had moved away, and in her place had come one who realized the possibility of her half acre of garden. She had planted in good order the old fashioned flowers, the house had been painted, vines were trained over it, a little attempt at a rustic arbor had been made and a tiny brook that ran through the yard had been bridged over. This example had spread like a contagion down that entire street. Not a house but had acquired at least a window box or some blooming flower pots to grace its front. The effect of this one woman, having the taste and enterprise to beautify with her own hands her little home, had affected the entire neighborhood.

Some observer in the country said to me the other day, in deploring the incoming of the trolley car, that our country roads were no longer safe for driving as of old but made the remark, "However, the trolley has done a wonderful thing for the front yards." True this is and as we go through the villages and towns we find one person is led to improve because a score of others will ride by viewing.

There are some however who do not appreciate the joys of the country; they have lived so long in the noise and excitement of the great city that to them the country is synonymous with isolation and the blues. Let them once taste for a few months of the year the happiness of looking out from their own windows over a beautiful country, of watching for the first song of the birds and the first fragrant flowers of an early spring day and there will be experienced an elevation of the soul that will make one more patient and philosophical in life.

A certain clerical friend had however a peculiar experience in trying to put this love of nature into a good old woman. She had been for many years a trusted employee in his family, but having grown old and tired in service had gone to live in rooms of her own in a plainer quarter of the town. Her old master felt badly to think of her spending the hot months in the place where

she was, and so he went to her one day and said, "Jane, my wife and I are going to Europe for the summer and we are going to have a nice cool summer in England, but we can't go away and leave you here, and I want you to try country life while we are away." She said she was very willing; it impressed her as being a variety, at least. So he took her up the Hudson and placed her in a very comfortable farmhouse in care of a good kind hearted woman, paid her board and left her with a goodbye and a feeling that the poor old soul would at least have comfort and coolness. He returned in September, and proceeding up the Hudson, found that Jane had flown weeks before, in a very unceremonious manner back to town. There he went and found her sitting in her attic room in a five-story tenement house, surrounded by her household gods and happy. And he said, "Jane, how could you do this? You are not strong and you need fresh air; why didn't you stay in that beautiful home?" She looked at him and said, "It's a deal better living among people than living among stumps." Jane had grasped the country living in the narrow sense.

There is a philosopher of our modern day who says, "Show me the garden of a man and I will tell you his character and his morality," and perhaps the tribute we owe to the friends of gardening can best be summarized in the words of Charles Dudley Warner who says, "the man who plants a garden is a benefactor to the human race."

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TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1902.

PART II.

BOSTON:
PRINTED FOR THE SOCIETY,
1903.

Robert Manning: from a Photograph taken 1890.

Courtesy of the American Pomological Society.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, April 5, 1902.

A duly notified stated meeting of the Society was held at eleven o'clock today, the President, O. B. HADWEN, in the chair.

As soon as the President called the meeting to order, Theodore H. Tyndale raised an objection, stating that the meeting had no Secretary. It was, however, stated by the Chair that Mr. Kidder had been appointed by the Executive Committee to succeed Mr. Manning, and when Mr. Tyndale was shown Section XIV he at once withdrew his objection.

The Secretary then read the records of the last meeting, both Mr. Manning's notes and the amplified records.

Richard M. Saltonstall moved, That the records as read by Mr. Kidder, the Secretary, of the doings of the Society at its Stated Meeting held January, 1902, are approved and are hereby adopted as the records of the Society, and that the Secretary be authorized and directed to sign said records.

William C. Strong protested against the statement appended to the records and moved, That that part of the record which now reads as follows, "The proposed Constitution and By-Laws as given below were approved by a majority vote and ordered to be entered upon the records for consideration at the Stated Meeting of the Society on the first Saturday in April," be canceled and instead thereof the following amendment be recorded, to wit:—

"The proposed Constitution and By-Laws as given below were briefly commented upon by Messrs. Elliott, Strong, and others, and further explained by Mr. Saltonstall. The previous question was then called for by Augustus P. Loring and was put to vote by the President, who declared it passed by a large majority. A motion to reconsider this vote failed to pass."

Francis Blake made remarks supporting the records as read. Mr. Strong defended his own motion.

The Chair stated that at the January meeting he had construed the call for the previous question as being intended to stop debate.

Arthur D. Hill now seconded Mr. Saltonstall's motion.

William H. Elliott asked for the re-reading from Mr. Manning's minutes of the January meeting of the motion to enter on the records the proposed new Constitution, which the Secretary then re-read.

Mr. Loring stated that his motion at the January meeting was to enter the proposed Constitution on the records.

Mr. Blake stated that he had then moved the previous question.

The Chair stated that he had put only the previous question.

Arthur D. Hill stated that this was strictly parliamentary, that the previous question had been put and also the motion to spread upon the records.

Mr. Strong stated that there had been a misunderstanding, that the previous question had passed and he thought no other.

Edward B. Wilder seconded Mr. Strong's motion in regard to expunging certain portions of the record as read.

Mr. Saltonstall stated that he had moved and read the proposed new Constitution, that after some discussion Mr. Blake had moved the previous question and that it was carried ; that Mr. Loring had moved that the Constitution be spread upon the records, and that Judge Hoitt had seconded that motion. He renewed his motion to approve the records as read by the Secretary.

Mr. Strong re-read his amendment.

Mr. Saltonstall stated that Mr. Strong's motion put off the whole question of the new Constitution so that no action could be taken on it that day.

Edwin H. Jose stated that what we wanted was to get the records correct, not necessarily the new Constitution.

Mr. Tyndale remarked that Mr. Loring should be able to give the correct version of the proceedings.

Mr. Loring stated that he had moved that the new Constitution be spread upon the records after Mr. Ware had taken the chair.

Judge Hoitt stated that he had been at the meeting, that Mr. Loring had moved, as stated, the new Constitution and that that was what was called for when the previous question was moved; that it was the same as the main question; that the Chair had put the main question for the previous question.

Mr. Strong's motion to amend the records was put and lost.

Mr. Saltonstall renewed his motion that the records be approved. Mr. Elliott entered a protest against their approval, and said he should contest it on legal grounds.

The Chair asked Mr. Saltonstall if he meant by his motion to shut off discussion, to which he replied that he most assuredly did not. Mr. Saltonstall's motion was then put and carried.

The report of the Treasurer was presented and General Appleton moved that it be accepted and spread upon the records. Benjamin P. Ware called for its reading. Mr. Blake moved that the Secretary have it printed and mailed to every member of the Society. This was voted, and the Chair called for its acceptance and it was voted to accept it.

The Chair stated that deferred and new business was in order.

Mr. Saltonstall moved, That the amendments to the Constitution and By-Laws proposed at the Stated Meeting of the Society duly held on the first Saturday in January, 1902, in favor of the adoption of which a majority of the members of the Society present at said meeting then voted, and which are entered on the records of the Society be and they hereby are adopted.

J. Allen Crosby moved that when the vote is taken the check list and ballot box be used and that the polls be open two hours.

The Chair appointed J. Allen Crosby, Aaron Low, and E. W. Wood as a committee to receive, assort, and count ballots. General Appleton moved that we proceed to ballot.

Mr. Jose thought we should have further discussion, though he stated that he was not opposed to the new Constitution.

Mr. Blake thought that everyone had had sufficient opportunity to become acquainted with the proposed Constitution.

The previous question was then called for by Mr. Jose.

Warren W. Rawson moved adjournment, which motion being put, the Chair declared himself in doubt and called for a show of hands and declared the motion lost.

The previous question was called for from all parts of the house.

The Chair declared that Mr. Ware had the floor and that everyone who wished should have a chance to talk.

William B. de las Casas called for the reading of the By-Law under which the Chair refused to recognize the previous question. The Chair read Section XXVII on Amendments.

Mr. Ware continued to talk against the new Constitution, in the midst of uproar. Mr. Saltonstall asked permission to say a word but Mr. Ware would not yield the floor. Philip A. Chase rose to a point of order but was not recognized by the Chair.

The previous question was again called for.

Mr. Saltonstall said that the new Constitution had been twice read at the January meeting, thoroughly discussed and spread upon the records, but he proposed that it be open to limited discussion for half an hour and that he was ready to answer any question in regard to it.

Mr. Strong thought that the meeting had better vote at once. Mr. Elliott wanted half an hour's discussion.

Mr. Jose withdrew his opposition to proceeding to a ballot.

Mr. Saltonstall wanted to amend the motion to keep the polls open two hours, to keeping them open but one hour, and so moved, but afterwards withdrew his motion.

The Chair stated that a motion to proceed to ballot seemed to him in order.

Mr. Elliott thought that some discussion should be allowed.

Mr. Blake again called for the previous question and it was carried.

Mr. Saltonstall moved that the house proceed to ballot upon the new Constitution.

The polls were opened at 12:38, and the ballots were YES and NO.

Mr. Saltonstall asked that as many as could, come back at the end of the balloting, about 2:30 o'clock.

The Chair declared that after the vote was taken, no reconsideration could be had, so that no one need stay from any apprehension.

Mr. Ware, as senior Vice-President, now took the chair, as Mr. Hadwen was obliged to leave.

Mr. Crosby gave warning of the closing of the polls at two minutes before the time for them to close, and at 2 :38 announced that the polls were closed.

The ballot committee now proceeded to assort and count aloud in the presence of the meeting, but especially under the eyes of General Appleton, Messrs. Hill, Wilder, and Rawson, first counting every ballot and dividing the yes and no ballots into two piles. Then each pile was counted.

While the balloting was going on, the Chair read the printed ballot of candidates for membership, and stated that all the names would be voted on at once if no objection was made. The ballots were then collected by Edwin A. Hall and the Chair declared elected, as members of the Society :

Miss Caroline P. Atkinson of Brookline,
Robert M. Bailey of Dedham,
Clifton P. Baker of Dedham,
Edward W. Breed of Clinton,
John C. Bullard of Cambridge,
Norris F. Comley of Lexington,
Mrs. Lilian H. Farlow of Cambridge,
James Garthley of Fairhaven,
Richard C. Manning of Salem,
Fred. R. Mathison of Waltham,
Horace E. Ware of Milton.

The Secretary read the following letter :

Salem, Mass., February 21, 1902.

Charles E. Richardson, Esq.,
Treasurer of the Massachusetts Horticultural Society.
Boston, Mass.

Dear Sir : — The brother and sisters of the late Robert Manning, for many years Secretary and Librarian of the Massachusetts Horticultural Society, desire, through you, to express their gratitude to the members

who sent a beautiful wreath in the name of the Society, to the funeral on Wednesday, and to all, who, by their presence at the services, testified to the high esteem in which they held their departed associate.

Very respectfully,

RICHARD C. MANNING.

The Secretary also read a letter from Mrs. James Comley, thanking the members of the Society for their sympathy extended to her on the death of her husband.

Mr. Crosby now reported for the committee to receive, assort, and count ballots on the new Constitution, that there had been cast a total of three hundred and forty-seven votes, of which two hundred and four were yes and one hundred and forty-three no, and the Chair declared the motion was lost, a two-thirds' vote not having been cast for the new Constitution.

The meeting then adjourned.

NATHANIEL T. KIDDER, *Secretary.*

BUSINESS MEETING.

SATURDAY, July 5, 1902.

A duly notified Stated Meeting of the Society was held at eleven o'clock today. President HADWEN presided and there were forty members present.

President Hadwen read an invitation to this Society, from the Massachusetts State Board of Agriculture, to attend its fiftieth anniversary, which is to be observed at Horticultural Hall, Tuesday, July 22, 1902.

William C. Strong offered the following memorial of the late Secretary, Robert Manning:

IN MEMORY OF ROBERT MANNING.

Suddenly and without warning on the 17th of February, 1902, Robert Manning disappeared from us; ceased from his mortal and passed into the eternal life.

His membership with us dated from the year 1848, thus giving him fifty-four years of active service, a record which slightly exceeds that of any other member.

Still more significant is the fact that during this time he has been closely identified with the affairs of the Society, and of late years has given active and continuous service.

It was natural that the son of Robert Manning of Salem, the man who established a pomological garden and nursery in the year 1823, six years before the incorporation of this Society, and who was in advance of any other man in the country in the importation and introduction of new fruits, should inherit his father's love for the products of the garden.

Of course he became familiar with the different varieties of fruits and flowers in his early boyhood, and it is probably true that for years past he has been our best authority in identifying fruits.

His service in this direction has been of great value to our members and to the public.

Since the year 1876 he has been continuously chosen Secretary of the Society; and to this office has been joined the duty of editing the Transactions and also the duties of Librarian.

In the year 1878 he completed the History of the Society, a work which reflects equal credit upon the Society and upon the author. Indeed, the book will remain as a standard authority in the early introduction of horticulture into this country, and a comprehensive history of its progress up to the date of its publication.

In all this work of editing in these many years we have reason to hold in high regard the good taste, the carefulness, and the ability with which the work has been done.

Having been engaged in this daily work for the past twenty-six years, Mr. Manning came to be known as the most conspicuous personage of the Society, not alone by the members, but also by pomologists throughout the country, and by all who sought aid from our valuable library.

His knowledge in all departments was sure to be helpful. With modest and quiet dignity and intelligence, he so met his various duties as to contribute largely to the credit and usefulness of the Society.

It has been fortunate for the Society to have enjoyed the services of such a man, so pure and critical in his tastes, so faithful and conscientious in his work, so discerning of its best interests for so many years. Well may his memory be held in enduring regard.

It is therefore voted that this testimonial be entered upon the records of the Society and that a copy thereof be sent to the family of the deceased.

At the conclusion of his address Mr. Strong moved that it be entered upon the records of the Society and that a copy be forwarded to the family of Mr. Manning.

Benjamin P. Ware in seconding this motion said, that he had been on terms of intimacy with Mr. Manning for many years, and expressed his approbation of the testimony that had been presented as to the value of his long service in this Society. The memorial was then adopted.

President Hadwen, for the Executive Committee, reported the resignation of Nathaniel T. Kidder as Secretary and Librarian of the Society, and the appointment of William P. Rich to the office.

He also offered the following recommendation which was adopted: That an oil painting of the late Secretary, Robert Manning, be obtained at an expense not exceeding one hundred dollars.

Under the head of deferred and new business, William H. Spooner offered the following motion:

Voted: That a committee of seven members of the Massachusetts Horticultural Society be appointed by the President to revise and amend the Constitution and By-Laws now governing said Society, the object of said revision to be the better ordering and transaction of said Society's business affairs, and harmonizing the conflicting views of the members, with power to expend such sums of money for counsel fees, printing and distributing its report, and other contingent expenses as may be found advisable by said committee.

After having been seconded by Edward B. Wilder, the motion was re-stated by the President.

William H. Spooner then read a letter from Arthur D. Hill representing several members of the Society who were unable to be present at the meeting, and stating that he was "authorized to say on their behalf, that they cordially agree in the desirability of the suggested committee, and unite with me in hoping that by this means a plan can be adopted which will be satisfactory to the whole Society."

The motion was then unanimously adopted and the President appointed as the committee:

HENRY P. WALCOTT,
WARREN W. RAWSON,
JOHN K. M. L. FARQUHAR,
EDWIN H. JOSE,
C. MINOT WELD,
RICHARD M. SALTONSTALL,
WILLIAM H. SPOONER.

The Secretary read letters from Messrs. William E. Endicott and G. W. Humphrey offering their resignations as members of the Library Committee. On motion of Mr. Strong it was voted that the resignations of the two gentlemen be accepted and that the deep regret of the Society be conveyed to them.

On motion of Mr. Strong it was voted that the remaining members of the Library Committee be empowered to fill the vacancies.

The President offered the following names for the Committee on School Gardens and Children's Herbariums:

HENRY L. CLAPP, *Chairman*,
WILLIAM E. C. RICH, *Secretary*,
MRS. H. L. T. WOLCOTT,
MISS KATHARINE W. HUSTON,
CHARLES W. JENKS,
HENRY S. ADAMS,
WILLIAM P. RICH.

On motion of Mr. Strong they were elected.

Mr. Spooner moved, and it was voted, that the Committee on Flowers have power to fill the vacancy on its committee caused by the death of James Comley.

Charles W. Jenks, Chairman of the Committee on Native Plants, reported that he found it difficult to secure members to serve on that committee. On motion of Mr. Spooner, Mr. Jenks was empowered to fill the vacancies.

A communication from Joseph H. Woodford, Chairman of the Committee of Arrangements, addressed to the Executive Committee was read by the Secretary.

It called attention to the lack of seating accommodations in the Exhibition Hall, and offered as a remedy the suggestions made in the last report of the Committee of Arrangements. As this report was not accessible at the time, Mr. Strong moved that the communication of Mr. Woodford be referred back to the Executive Committee.

Thomas Harrison moved an amendment, that the committee prepare a plan of the improvements it desires to have made.

The amendment was accepted and it was then voted to refer the communication back to the Executive Committee.

The Committee of Arrangements also announced that it had decided to move forward one week all the exhibitions scheduled for July and August and, on motion of Mr. Strong, it was voted that the matter be referred back to the committee with full powers to act.

On motion of Mr. Spooner it was voted that the portrait of the late J. D. W. French, which has been presented to the Society by his family, be accepted, and that the thanks of the Society be extended to the donors.

Action was taken on the death of Messrs. H. H. Hunnewell and James Comley. On motion of Mr. Strong it was voted to request Benjamin C. Clark of the Executive Committee to prepare a memorial of the late Mr. Hunnewell and, on motion of Mr. Harrison, it was voted that Patrick Norton be requested to present a memorial of the late Mr. Comley.

The following named persons, having been recommended by the Executive Committee for membership in the Society were, on ballot, duly elected:

Paul R. Blackmur of Quincy,
John W. Duncan of West Roxbury,
Herbert H. Dyer of Cambridge,
Lucius H. Foster of Dorchester,
Miss Ella F. Hildreth of Lowell,
Allen Hubbard of Newton Centre,
Ellerton James of Nahant,
Mrs. Olivia B. James of Nahant,
N. W. T. Knott of Waban,
E. L. Lewis of Taunton,
Miss Amy Lowell of Brookline,
David Lumsden of Jamaica Plain,
Edward MacMulkin of Boston,
George Melvin of South Framingham,
Alexander Montgomery, Jr. of Natick,
James H. Morton of Boston,
Edward Powell of Taunton,
John Pritchard of Newtonville,

WILLIAM A. PROSSER of Medford,
ALBERT H. ROFFE of Newton Centre,
CHARLES SPRAGUE SARGENT, JR. of Brookline,
RICHARD CLIPSTON STURGIS of Boston,
EDWARD J. WELCH of Dorchester,
EZRA H. WHEELER of Dorchester,
GEORGE WILLIAM WHEELWRIGHT of Jamaica Plain.

Communications were read as follows:—

From the Eastern New York Horticultural Society inclosing the program of its annual meeting and stating it would be pleased to have the presence on that occasion of delegates from this Society. On motion of Mr. Spooner it was voted that the Committee on Fruits be empowered to name such delegates.

From the Horticultural Society of New York requesting this Society to name delegates to the International Plant Breeding Conference to be held in New York City, September 30, October 1 and 2, 1902. On motion of Mr. Wilder it was voted to refer the subject to the Executive Committee.

Mr. Spooner moved and it was voted, that when this meeting adjourns it be to August 2, 1902. He also stated that at the January meeting action was taken regarding the disposal of the three granite statues of the old hall. They are at present stored in the yard of the Boston Storage Warehouse Company at an expense of sixty dollars a year. An offer of one hundred dollars has been received for them. Benjamin P. Ware arose and said that he would give one hundred and fifty dollars for them.

Mr. Spooner moved and it was voted, that the matter be referred back to the committee having it in charge.

The meeting then adjourned.

WILLIAM P. RICH, *Secretary.*

BUSINESS MEETING.

SATURDAY, August 2, 1902.

An adjourned meeting of the Society was held at eleven o'clock today. President HADWEN presided and there were twenty-five members present.

The Library Committee reported the appointment of Charles W. Jenks and T. Otis Fuller, to fill the vacancies caused by the resignations of Messrs. Endicott and Humphrey.

The Secretary reported the death of Daniel T. Curtis, who was for many years an active member of this Society.

Remarks concerning Mr. Curtis were made by Jacob W. Manning, Thomas Harrison, and the Secretary. It was voted that these three members be appointed a committee to prepare a memorial of Mr. Curtis.

The President appointed the following named members a committee to nominate candidates for Officers and Standing Committees for the ensuing year:

WILLIAM H. SPOONER, *Chairman*,

ARTHUR H. FEWKES,	BENJAMIN C. CLARK,
E. W. WOOD,	AARON LOW,
J. WOODWARD MANNING,	PATRICK NORTON.

The following named persons, having been recommended by the Executive Committee for membership in the Society were, on ballot, duly elected:

HAROLD J. COOLIDGE of Boston,
ARTHUR E. DAVIS of Wellesley,
MRS. ARTHUR E. DAVIS of Wellesley,
MRS. ROBERT C. HOOPER of Boston,
G. D. LOW of Boston,
E. PREBLE MOTLEY of Boston,
MRS. ELLEN R. PICKMAN of Boston.

Adjourned to Saturday, September 6.

WILLIAM P. RICH, *Secretary*.

BUSINESS MEETING.

SATURDAY, September 6, 1902.

An adjourned meeting of the Society was held at eleven o'clock today. President HADWEN presided, and there were twenty members present.

Patrick Norton offered the following memorial of the late James Comley, which was read by the Secretary.

IN MEMORY OF JAMES COMLEY.

James Comley, the subject of this sketch, was born at Derry Hill, England, May 29, 1835. His father's freehold adjoined the estate of the Marquis of Landsdowne in Bowood.

In his early childhood he became very fond of horticulture, so much so that he was apprenticed for six years to learn the profession of gardening in all its branches. But at the end of five years he had become so proficient, under the instructions he had received at the Marquis of Landsdowne's establishment, that he was allowed to graduate a fully competent gardener.

Shortly after this he came to America, and becoming acquainted with Mr. Evers, a copartnership was formed under the name of Evers & Comley, as flower merchants and decorators. They had the honor of decorating the Revere House when the Prince of Wales was there, also the Boston Theatre, on the occasion of the grand ball given in honor of the Prince, now King Edward VII of England.

After remaining in business in Boston for several years, he removed to Worcester, where he devoted himself to the general florist's business for three years and then returned to Boston.

About this time he became acquainted with the late Francis B. Hayes. This was in 1870 and Mr. Comley was in Mr. Hayes' employ for many years after.

In the year 1892 Mr. Comley took a trip to Japan and on his return brought with him many rare plants and seeds from that interesting country.

He has been also very fortunate in producing some fine seedling roses, rhododendrons, and other plants, which added materially to his reputation as an enthusiastic horticulturist.

Mr. Comley was a large exhibitor at the shows of the Massachusetts Horticultural Society and his exhibits of rare and curious flowers and plants added very materially to the success of the exhibitions.

Mr. Comley was a man one could depend upon, for his word was as good as his bond. He was genial in his intercourse with mankind and generally beloved by all who knew him.

His last exhibition before the Massachusetts Horticultural Society was at the Chrysanthemum Show in the fall of 1901, when he was awarded a silver medal.

While busily engaged in the vocation he loved, apparently in good health, on February 1, 1902, he suddenly expired, deeply regretted by all who knew him. *Requiescat in pace.*

PATRICK NORTON.

On motion of William H. Spooner, it was voted that the memorial be accepted and referred to the Committee on Publication.

The Secretary, as Chairman of the Committee appointed to present a memorial of the late Daniel T. Curtis, reported as follows:

IN MEMORY OF DANIEL T. CURTIS.

Daniel T. Curtis was born at Cambridge, Massachusetts, January, 1815, and died at Dorchester, July 26, 1902, at the ripe age of eighty-seven years and six months.

He was elected a member of the Massachusetts Horticultural Society in 1849 and for a period of thirty years following was actively engaged in its work. He was for eight years Chairman of the Committee on Vegetables, in each of which he rendered a full and faithful report.

He was also associated at various times, until 1878, with the Committees of Arrangements, Library, and Fruits, and was one of the committee of ten appointed to make arrangements for the laying of the corner stone of the Tremont Street Horticultural Building, August 18, 1864.

In all these years his interest in the Society was manifested by his frequent contributions to our exhibitions of plants, flowers, and vegetables, as well as by the great amount of work which his connection with the several committees mentioned must have entailed.

He was engaged in the seed and garden supply business in Boston for many years and was for a long period associated with Mr. E. W. Cobb of Newton, under the firm name of Curtis & Cobb, finally going out of business in 1878.

After a residence of many years in Boston, he lived for a time at Sharon, then at Medford, and the closing years of his long life were spent at Dorchester where he died.

He married about the year 1850, Mrs. Sarah Dupee of Boston, who has been several years deceased, leaving no issue by him.

His parents have long since departed and a large family of brothers and sisters have also all passed away in advance of him, and thus he leaves no near relatives excepting nephews and nieces.

To Mr. Cobb, his business partner for twenty-three years, your committee is indebted for much of the material of this sketch of Mr. Curtis' life.

Mr. Cobb testifies to the character and worth of his old friend and associate in the following tribute to his memory:

"He was the most genial of men, unselfish to a fault, nothing apparently giving him more pleasure than to be able to bestow a favor upon an acquaintance, making friends easily and always popular with those with whom he came in business contact. He had also to a remarkable degree the confidence and esteem of very many of the older, prominent citizens of Boston, and I may say also of those of many other sections of New England, in every walk of life, who were numbered among his business patrons."

By reason of the infirmities of advancing age and the fact that he had outlived nearly all of his former associates, he had long since passed from the stage of active work, and now that his life's record is closed, we offer this tribute to the memory of one of the great company of earnest men, through whose interested labors in the past, our Society has attained its present high position.

WILLIAM P. RICH,
JACOB W. MANNING,
THOMAS HARRISON. } *Committee.*

On motion of Mr. Harrison it was voted that the memorial be accepted and referred to the Committee on Publication.

William H. Spooner, Chairman of the Nominating Committee, reported a printed list of candidates for Officers and Standing Committees for the year 1903.

Benjamin P. Ware moved that the report of the Nominating Committee be accepted and his motion was seconded by Mrs. E. M. Gill.

John K. M. L. Farquhar suggested that action on the report be delayed until an expression of opinion regarding it could be had from the new committee on the revision of the Constitution.

He thought that fewer members on some of the Standing Committees would be desirable, and that better results would be obtained from a small committee of three experts, who should receive a more liberal compensation for their services than is at present paid. He also stated that another list of candidates might be presented and, if so, it would be with the idea of promoting the best interests of the Society.

Mr. Ware, in reply, remarked that we are acting under the present Constitution and he saw no other way for the committee to act except in accordance with it.

The President then stated the motion of Mr. Ware, which was that the report of the Nominating Committee be a pted, and it was so voted.

On motion of Mrs. H. L. T. Wolcott it was voted, that the Nominating Committee be continued and have power to fill any vacancies that may occur.

A communication was read announcing the death of George W. Willis of Chelsea, and the Secretary offered the following resolution which was adopted:

The Massachusetts Horticultural Society learns with deep regret of the death on August 26, of George W. Willis, for thirty-four years a valued member of this Society, and we hereby extend to his family the expression of our appreciation of his interest in our work, and also our sincere sympathy in the loss they have sustained.

A letter from Richard C. Manning of Salem was read, acknowledging the receipt of a copy of the memorial of the late Secretary, Robert Manning, and thanking the author of the memorial and the members of the Society for their grateful and considerate action in testimony of their value of the services and their respect and regard for the character of our brother, the late Secretary.

The President spoke on the subject of the disposition of the three granite statues of the old building and, on motion of William H. Spooner, it was voted that the committee to which the matter was referred be discharged and the subject referred to the Executive Committee with power to act.

The meeting was then dissolved.

WILLIAM P. RICH, *Secretary.*

BUSINESS MEETING.

SATURDAY, October 4, 1902.

A duly notified Stated Meeting of the Society was held at eleven o'clock today, it being the Annual Meeting for the choice of Officers and Standing Committees for the ensuing year. President HADWEN presided and there were about forty members in attendance.

Horatio Hollis Hunnewell.

Courtesy of "Our Town", Wellesley, Mass.

William H. Spooner moved, that, as the Nominating Committee had no further changes to make in the list of nominations reported in the printed ballot, its report be accepted and the Committee discharged, and the motion was carried.

The Executive Committee reported that the Treasurer of the Society had received $800 from the Executors of the will of Benjamin H. Pierce of Watertown, the principal to be kept intact, the income to be used for the introduction of new fruits.

On motion of Mr. Spooner it was voted that the bequest be accepted.

On motion of William C. Strong it was voted to extend an invitation to the American Pomological Society to hold its next Session in the building of the Massachusetts Horticultural Society, in September, 1903, and to offer such use of the Halls of the Society as may be necessary.

The Executive Committee also reported a recommendation for the appropriation of one hundred and fifty dollars for the Library Committee, for the purchase of two card-catalogue cases with the necessary accessories, and on motion of Benjamin C. Clark, the recommendation was adopted.

On motion of Mr. Clark it was voted that a committee of three be appointed with full power to procure a portrait of the late H. Hollis Hunnewell. The President appointed as the committee, Benjamin C. Clark, William C. Strong, and William H. Spooner.

Mr. Clark presented and read the following memorial of the late H. H. Hunnewell:

HORATIO HOLLIS HUNNEWELL,

Born July 27, 1810.

Died May 20, 1902.

By BENJAMIN C. CLARK.

It is a pleasant custom of our Society that however eloquent and appreciative may be the eulogies of our members elsewhere, we reserve for the pages of our own record the memorial tribute, however humble, of those

who have given marked evidence of their interest in the aims and objects for the promotion of which our organization has existed for nearly three-quarters of a century.

It is not often that we have the opportunity to commemorate the life and services of a man like Mr. Hunnewell, of whom it is not too much to say that we have never lost a member who has left our State as well as our Society under greater obligations. In thinking of him one is reminded of what is told us of Solomon, that "God gave him wisdom and understanding exceeding much and largeness of heart, even as the sand that is on the sea-shore." "He spake of trees, from the cedar tree that is in Lebanon even unto the hyssop that springeth out of the wall." And in the gift of wisdom Mr Hunnewell found that "length of days was in her right hand and in her left hand riches and honor."

Horatio Hollis Hunnewell was born in Watertown, July 27, 1810. His father, Walter Hunnewell, a graduate of Harvard, was a physician and practised medicine in Watertown for a period of sixty years. Dr. Hunnewell married Miss Susanna Cooke, of Watertown, and was the seventh generation from Roger Hunnewell who came from England to this country about the year 1640. Mr. H. H. Hunnewell, the subject of this sketch, received an excellent education in the schools of Watertown and later in France, and in 1893 Harvard University conferred upon him the honorary degree of A. M.

At the age of fifteen years, Mr. Hunnewell went to Paris and ten years later became a partner in the banking house of Welles & Co., a firm well known to all American travelers. In the same year he married Isabelle Pratt Welles, daughter of the Hon. John Welles, of Boston, remaining in Paris until his return to the United States when he established the house of H. H. Hunnewell & Sons, in Boston. In passing we note from various sources the great interest displayed by Mr. Hunnewell's father-in-law in farming matters. His reports on Orchard and Forest Trees and Grasses, on Milch Cows, Heifers, etc., on Woodland and Forest Trees, and also on Asparagus, on experiments, discoveries and inventions, all show him to have been a man of enlarged views. Mr. Welles was one of the earliest members of our Society, being a subscriber before its organization in 1829, continuing his membership until his death in 1855.

To return to Mr. Hunnewell. It is a singular fact that until he was over forty years of age he never manifested the taste for arboriculture and horticulture in the direction in which he became so proficient. Although taking an active part in business, being largely interested in Western railroads and a director in many financial institutions, he always found time to devote to his favorite pursuits and he was never happier than when he was extending his generous hospitality to his many visitors. His benefactions were numberless. The gifts of a town hall, library, and park to the town of Wellesley were among them. Perhaps one of the best evidences of his kindness of heart was his habit, as stated by the Chairman of the Board of

Selectmen, when leaving for his winter home in Boston, of saying to the Town Clerk, "Be sure and do not allow any one to suffer during cold weather; send them whatever they need and I will pay the bill." *Ex uno disce omnes.*

No one who was present will ever forget the twenty-third of May, the day of Mr. Hunnewell's funeral. The simple service, the flags at half-mast, the places of business all closed, testified to the universal respect for him who had gone from our presence and entered into the higher life through "the portal we call death," after nearly ninety-two years which, to use his own language, "he had been permitted to pass by the love of the Lord, his Creator, in this fair land." As one gazed at the solitary oak which, with the exception of the pines, was the only tree upon the land when Mr. Hunnewell commenced his labors at Wellesley, he could realize the force of the expression of "the wilderness blossoming as the rose;" every tree and every blossom seemed to testify of his taste and care.

No man could have been a greater benefactor than was Mr. Hunnewell to our Society. His fund established for annual prizes, his contributions to our exhibitions, his personal labors on our committees, all will cause his name and memory to be held in grateful recognition for many a long year to come. In closing, I venture to borrow these beautiful lines from "Our Town" for July, 1902, a memorial number of a monthly magazine printed at Wellesley.

H. H. H.

Each year, when sun and shower and lengthening days
  Brought back to earth her sweetness and perfume,
A gracious presence trod our quiet ways
  And joyed in all their loveliness and bloom.

A grave, observant man: whose gaze serene
  Looked out upon the world and found it good.
The faithful steward of a Power unseen
  For wide and wise beneficence he stood.

To lesser things he gave a thoughtful care;
  The humblest need or sorrow touched his heart.
He made the waste a garden but to share
  With friend and stranger all its perfect art.

Life gave him generous gifts in ample store
  Of all the things that men do greatly prize;
Health, wealth, the joys of home, the mystic lore
  Of tree and flower unveiled before his reverent eyes.

Blessing and blest he lived. The happy years
  Slipped softly into shadow, and their end
Was peace. For him all joy, for us the tears.
  Our world has lost a helper and a friend.

— A. C. W.

On motion of Mr. Spooner it was voted that the memorial be adopted and referred to the Committee on Publication and that a copy be sent to the family of Mr. Hunnewell.

On motion of Mr. Clark it was voted that the polls at the annual election be kept open for two hours and, on motion of Mr. Strong, it was voted that the polls be opened at 11 : 30 A. M. and closed at 1 : 30 P. M.

The President appointed Aaron Low, E. W. Wood, and Edwin A. Hall a committee to take charge of the check list, and to receive, assort, and count the ballots.

The following named persons were elected to membership in the Society :

MRS. HENRY L. HIGGINSON of Boston,
FRANK H. EVANS of Malden,
F. L. OAKES of Newton,
CHARLES L. HOVEY of Waban,
GEORGE B. LEIGHTON of Monadnock, N. H., and St. Louis, Mo.

On motion of Mr. Spooner it was voted that when this meeting adjourns it be to the first Saturday in November.

The following communications were read by the Secretary:

From Mrs. R. A. Martin of Chelsea, acknowledging the receipt of the resolution of the Society respecting the death of her father, George W. Willis.

From Henry John Elwes, F. R. S., of Cheltenham, England, requesting permission to republish, in the Journal of the English Arboricultural Society, a Lecture on the Propagation of Trees, by Jackson Dawson, published in the Transactions for 1885, and also informing the Society that he was engaged in collecting material for a large work on the trees of Great Britain. He solicited the interest of the Society in this undertaking.

On motion of Benjamin P. Ware it was voted that the request of Mr. Elwes be granted.

The death of Lamont G. Burnham of Essex was announced and, on motion of Mr. Low, it was voted that a committee be

appointed to prepare the customary record of Mr. Burnham's life. The President appointed as that committee Aaron Low, Benjamin P. Ware, and Henry G. Jordan.

President Hadwen called the attention of the members to the portrait of the late Robert Manning, which had been placed in the Library.

The President being obliged to leave called Vice-President Ware to preside during the rest of the meeting, and at a few minutes after half-past one o'clock the committee on the voting lists reported sixty ballots cast, and that the list of candidates reported by the Nominating Committee had been elected.

The result of the election was also stated by the President *pro tempore*, who declared the candidates to be the duly elected Officers and Standing Committees for the year 1903.

Adjourned to Saturday, November 1.

WILLIAM P. RICH, *Secretary*.

BUSINESS MEETING.

SATURDAY, November 1, 1902.

An adjourned meeting of the Society was held at eleven o'clock today. President HADWEN presided and there were fifteen members present.

The Executive Committee reported a recommendation that the following amounts be appropriated for prizes and gratuities for the ensuing year:

For	Plants	$1,500.00
"	Flowers	1,875.00
"	Native Plants	125.00
"	Fruits	1,275.00
"	Vegetables	900.00
"	Gardens and Greenhouses	375.00
"	School Gardens	75.00

These amounts are twenty-five per cent less than those appropriated for the year 1902.

On motion of William H. Spooner it was voted that the consideration of the report of the Executive Committee be postponed to the next meeting of the Society.

Thomas Harrison spoke of the work of the Committee on Lectures and Publication and thought that the Chairman should receive compensation for his services. He moved that the Chairman of the Committee on Lectures and Publication be paid one hundred dollars annually, and the other members one dollar a day, for such time as they devoted to the work of the Committee.

William C. Strong offered some remarks on the motion to pay salaries to the Committee on Lectures and Publication. He thought it an unfortunate time to bring up the subject as the Society was facing a deficit of some $4,000 a year.

The motion was not seconded.

The following named persons were elected to membership in the Society:

ARTHUR NIXON of Taunton,
CHATTERTON WARBURTON of Fall River,
GEORGE F. FABYAN of Brookline,
EDGAR HOWARD DOANE of Wenham,
OSCAR HOSMER of Wenham,
ALFRED PRESSON of Gloucester,
RICHARD D. KIMBALL of Waban.

A communication from Francis H. Appleton was received, containing a check for $123.61, the proceeds of the Opening Flower Show of 1901. It was requested that the amount be expended for library purposes.

On motion of Mr. Harrison it was voted to accept the communication and check of Mr. Appleton and to devote the proceeds as indicated.

A communication was received from the Massachusetts Fish and Game Protective Association requesting the Society to send one or more delegates to a convention to be held in Boston on November 13.

On motion of Edwin A. Hall it was voted to accept the communication and to appoint two members as a committee to represent the Society on that occasion. The President appointed as the committee, Benjamin C. Clark and Charles E. Richardson.

Adjourned to the first Saturday in December.

WILLIAM P. RICH, *Secretary.*

BUSINESS MEETING.

SATURDAY, December 6, 1902.

An adjourned meeting of the Society was held at eleven o'clock today. President HADWEN presided and there were twenty members present.

The Secretary read the Annual Report of the Secretary and Librarian. J. Woodward Manning, Chairman, read the Annual Report of the Committee on Flowers.

E. W. Wood, Chairman, read the Annual Report of the Committee on Fruits.

Warren H. Heustis, Chairman, read the Annual Report of the Committee on Vegetables.

Arthur H. Fewkes, Chairman, read the Annual Report of the Committee on Plants.

Patrick Norton, Chairman, read the Annual Report of the Committee on Gardens.

William H. Elliott, Chairman of the Committee on Establishing Prizes, presented the proposed Schedule for 1903.

William H. Spooner, Delegate to the Massachusetts State Board of Agriculture, made his Annual Report.

These reports were separately accepted and referred to the Committee on Publication.

The following named persons having been duly recommended by the Executive Committee were, on ballot, elected to membership in the Society.

EMIL JOHANSSON of Brookline,
CHARLES E. HELLIER of Boston,
HERBERT W. RAWSON of Arlington.

The Secretary reported the death of Henry Probasco and offiered the following motion which was voted:

The Massachusetts Horticultural Society learns with deep regret of the death on October 26, of Henry Probasco of Cincinnati, Ohio, for eleven years a Corresponding Member of this Society, and we hereby express to his family our appreciation of his interest in this Society and our sincere sympathy in their bereavement.

On motion of Patrick Norton the thanks of the Society were voted to Edward Hatch, Esq., for the special prizes offered by him for fruit-houses.

On motion of J. Woodward Manning it was voted to express the thanks of the Society to Mrs. J. Montgomery Sears, Messrs. Kelway and Sons, and The Society of American Florists for the various prizes offered by them.

On motion of William H. Spooner it was voted that the report of the Executive Committee referring to the appropriations for prizes and gratuities for 1903 be laid upon the table for final action at the January Meeting.

The meeting was then dissolved.

WILLIAM P. RICH, *Secretary.*

ROBERT MANNING.

BY WILLIAM P. RICH.

To record the life work of Robert Manning would be to recite the history of the Massachusetts Horticultural Society for nearly the whole period of its existence.

His father, of the same name, was one of the founders of the Society and was present and elected a vice-president at its first meeting for organization, March 17, 1829.

The senior Robert Manning was a pioneer in this country in the extensive cultivation of fruit trees for commercial purposes, and began as early as 1817 the establishment of an orchard and nursery at Salem, Massachusetts, for the purpose of growing a large number of fruit trees, of various kinds, in order to test by cultivation, their adaptability and hardiness for the New England climate. He procured and distributed many new varieties of fruits from Europe and got together the largest collection of fruit trees then known in the United States, having, it is said, one thousand varieties of pears alone. For many years he was the leading authority in the country on the cultivation and nomenclature of fruits.

His little book on Fruit Trees, published in 1838, of which several editions are in the library of the Society, was the precursor of the long line of such publications continuing to the present day.

Into this pomological garden at Salem, the son Robert was born July 6, 1827, and in the midst of these surroundings was his whole life passed.

It is related that before he could plainly pronounce the long name of the Society he would say to his father, when a new or interesting variety was under discussion in the family circle, "Take it to the horticultural exhibition."

In his early years he was frequently called upon to take a basket of fruit to the exhibitions at Boston and so he felt, as he often expressed it in later years, that he was "born into the Horticultural Society."

As a boy he was of a somewhat reserved nature, quiet and studious, not especially interested in sports, but fond of walking, that recreation of observant and thoughtful minds. He was ingenious in mechanical work, interested in general literature, especially history, biography, and poetry, and a youth of high moral standards; qualities of character similar to those of his renowned cousin, Nathaniel Hawthorne.

At the age of eleven years he was graduated from the North Salem Grammar School and in 1838 entered the English High School of Salem, completing the course in 1841.

The quality of the young man and his record at that time are shown by the fact of his being engaged for the ensuing term as an instructor in the school.

The death of his father the following year, 1842, brought him face to face with his life's work and to that end he had been trained and instructed by his father.

Although a boy of fifteen, he and his brother Richard at once took up the work of the pomological garden and carried it on for many years, and the name Robert Manning which had been from the founding of the Society a familiar one upon its records was to be continued for a further period of nearly sixty years.

The first exhibition of fruits by Robert and Richard, after their father's death, is recorded in the Transactions under date of September 13, 1843, when they exhibited a large number of varieties of pears, apples, peaches, and plums.

The report of the fruit committee on the exhibition of September 18, 1844, contains the following paragraph:

"We are glad to see the sons of the lamented Manning so much engaged in the favorite pursuit of their father. They have our best wishes that their efforts may be crowned with success. Notwithstanding their soil is not rich or calculated to produce large specimens, yet their collection of pears obtained the second prize for the greatest number of kinds and the best grown."

At the exhibition held September 16, 1845, Robert Manning of Salem contributed two hundred and forty varieties of pears, all named. At the Nineteenth Annual Exhibition of the Society held September 22, 1847, he showed two hundred and fifty-five varieties of pears, and on September 2, 1848, two hundred and sixty

sorts of pears and one hundred and eighteen varieties of apples. In 1848 he became a life member of the Society and was appointed one of the standing committee on fruits, serving in this capacity at different times for many years.

During the fifteen or more years following we find him occupied with his pomological garden, displaying its products at the various exhibitions of the Society, and making an occasional visit to the conventions of the American Pomological Society with his friend, Marshall P. Wilder.

He had an intimate acquaintance with the leading pomologists of the country and attended the first meeting of the American Pomological Society in 1849, on which occasion, although but twenty-two years old, he was appointed on a committee to prepare a list of fruits for general cultivation of which committee Andrew J. Downing was chairman.

In 1869 he was appointed editor of Tilton's Journal of Horticulture and contributed to its pages many articles on fruits and plants. His connection with this magazine was terminated by its discontinuance in 1871.

In 1874 he was engaged to edit the Transactions of the Massachusetts Horticultural Society, the office of editor being then established under the presidency of William C. Strong.

He served in this position the following year when the office of editor being then discontinued, he was elected Secretary of the Society, his first annual report being that for 1876. From this date until his death he was prominently identified with and actively employed in the conduct of the Society's affairs.

In 1880 under his supervision and editorship was brought to a completion the "History of the Massachusetts Horticultural Society," concerning which the committee in charge of the work remark in their preface, "The Editor, Robert Manning, has brought to the work the utmost faithfulness and constant endeavor to secure strict accuracy. The investigation of records, often obscure, has required much time and labor and unwearied application, and to him is due the credit of bringing the history to its present form." Here it may be stated that all of his editorial and clerical work was characterized by much literary ability, good taste, and above all, by painstaking effort in verifying references and substantiating statements of facts.

He had a most retentive memory and was from his boyhood diligent in storing away in his mind interesting facts and poems. He was especially fond of poetry and could repeat the whole of Scott's Lady of the Lake, the greater part of the Lay of the Last Minstrel, Marmion, and many of the poems of Whittier, Bryant, and Longfellow, besides those of other authors.

In later years this practice, with his wide reading of standard literature, especially in history, biography, and travel had given him a mine of information from which he was wont to draw as occasion required. He had also a keen appreciation of the humorous side of life, and took delight in the hearing or relating of a good story.

The great library of the Society to which his father contributed its first volumes was developed under his care and the generous interest of its friends until it has become one of the notable horticultural libraries of the world.

He was familiar with every book and guarded them with almost jealous solicitude, yet always ready and helpful to aid the inquiring student in searching out the treasures they contain.

Although his special interest was in pomology, he was well versed in other departments of horticulture, to which, with his familiarity and acquaintance with horticulturists and horticultural literature, he brought the ripe fruitage of his own long and practical experience.

The value of his pomological work has been recognized in the following awards of medals which have been bestowed upon him.

1845. Silver Medal from American Institute, N. Y., to Robert Manning for one hundred choice varieties of autumn and winter pears from his own grounds.

1855. Silver Medal from Massachusetts Horticultural Society to Robert Manning for collection of pears.

1876. Bronze Medal for a collection of fruits exhibited at the U. S. Centennial, Philadelphia.

1881. Silver Medal for eminent services in Pomology, from the American Pomological Society.

1900. Bronze Medal for work in Pomology, Paris Exposition.

In his home life he was contented in the companionship of his sisters, and his leisure hours were occupied with his garden and his trees. Thus the years glided serenely by until the last Saturday night came that called him from his accustomed duties.

Early on the following Monday morning, February 17, 1902, the final summons came suddenly, and in the home where he was born he passed away at the age of seventy-four years and seven months.

It is fitting that upon the pages of these Transactions, which for twenty-eight years have borne witness to his faithful service, there should be placed the tribute of appreciative remembrance.

REPORT

OF THE

COMMITTEE ON PLANTS

FOR THE YEAR 1902.

By ARTHUR H. FEWKES, CHAIRMAN.

Your committee is pleased to report continued interest in this department notwithstanding predictions to the contrary. The past year has been an experimental one in some respects, as it was the first year during which exhibitions were held in our new hall. The discouraging conditions under which the exhibits were obliged to be made seem not to have deterred exhibitors from making fine displays, although many complaints have been made of the inharmonious effects produced by the unfortunate color of the walls, against which many of the plants were obliged to be staged.

The year has been fruitful in new introductions, many of them of the exhibitors' own productions, and the awards for these show that the year is not behind previous ones in this respect.

It is noticeable also that many of the awards have been made on Saturdays, showing that the exhibitors appreciate the weekly shows, knowing that it provides a chance for them to offer their plants at any time when they may be at their best. It surely would be a great loss to abolish this privilege, not only to the owners of the plants, but to the public also.

At the large exhibitions we have been mostly dependent upon a few old exhibitors for the greater part of the displays made, although there have been several new ones whose plants have been very welcome, if few in number. While this is not wholly desirable it cannot be avoided owing to the limited number of persons who have suitable plants and are willing to place them on exhibition.

As the general features of the various exhibitions are not materially different from year to year, each show will not be taken up separately, but such exhibits as seem to be of unusual interest or which are educational or instructive in their nature will receive attention.

The first exhibit to claim our attention, outside of the regular prizes, was made on Saturday, February 8, by William Thatcher, who made a display of his seedling asparagus, and which he entered in competition for the prizes offered by the Society of American Florists. It seems to be a chance seedling from *Asparagus tenuissimus*, with the same foliage, but of a very dwarf habit, making it particularly valuable for pots and jardinieres if it can be propagated with sufficient ease. This with *Nephrolepis Piersoni*, which we will describe later, were the only ones shown in competition for this prize and we recommend the award of the first prize for the *Nephrolepis* and the second for the *Asparagus*.

On March 1, James Garthley, gardener for H. H. Rogers, Esq., showed a very remarkable variegated plant, *Saxifraga sarmentosa tricolor superba*, which was brought from Scotland by him the previous autumn. It is a very beautiful variegated form of the old strawberry geranium, so-called, the leaves being beautifully marked with white and pink. While it is not an entirely new plant, it has never been shown here before and it was awarded the Society's Silver Medal.

On the same day there was shown before the Society for the first time two other plants of much merit, *Odontoglossum midgleyanum* from H. H. Hunnewell, and a hybrid *Cypripedium* raised by J. E. Rothwell, named Edmund Rothwell, a cross between *Sallierii Hyeanum* and *C. Hookerae*. The Society's Silver Medal and a First Class Certificate of Merit were awarded respectively.

The Pierson Fern.

Courtesy of the F. R. Pierson Company.

By far the most important and remarkable new plant that has been shown before the Society for many years was placed on exhibition at the March Show by the F. R. Pierson Company of Tarrytown, New York, and was shown under the name of *Nephrolepis Piersoni*. It originated with them as a sport from *N. exaltata Bostoniensis* and is very interesting botanically, as well as of great value commercially. Instead of the fronds being simply pinnate, as in the original form, the pinnæ have become divided making the frond twice pinnate. At the same time the power of indefinite extension of the tips of the fronds, a characteristic peculiar to *Nephrolepis*, seems to have been communicated to the pinnæ, thereby making the fronds of great width and beauty in a well developed plant.

There was also exhibited by L. H. Foster a similar variety of the same plant under the name of *Nephrolepis Fosteriana*. There was the same division of the pinnæ, but while this was noticeable only in the sterile fronds of Pierson's variety, it was confined to the fertile ones only in Foster's, thereby producing a much different effect and less beautiful. The Pierson variety was so remarkably distinct and at the same time of so much commercial value, that we considered the plant worthy of the highest award offered by the Society; we therefore awarded it the Gold Medal. The *N. Fosteriana* was awarded a First Class Certificate of Merit.

At this same exhibition there were several other new and interesting plants, never before shown here, and which received special awards. The most prominent among them was a specimen of the finest species of the so-called yellow callas, *Richardia Pentlandii*, shown by the Harvard Botanic Garden. It is a beautiful plant with a flower of a fine clear yellow color. A First Class Certificate of Merit was awarded for this.

The same award was made to Walter P. Winsor for *Coelogyne pandurata*. Although it is not new to cultivation, it is seldom seen, and, as we believe, was never before shown here. This orchid is one of those plants whose flowers attract more by the beautiful combination of colors displayed by them than by their great brilliancy. The individual flowers are of medium size with the sepals and petals all of a very bright green. The lip is of the same green color with a number of velvety black embossings

which produce an effect in color which is very seldom seen in flowers and is as beautiful as it is rare.

Honorable Mention was awarded to R. & J. Farquhar & Company for the new *Schizanthus wiestonensis* and to M. H. Walsh for two very pretty new seedling Rambler roses, Fairy Queen and La Fiemetta.

On April 5, Mr. E. O. Orpet, gardener to E. V. R. Thayer, was awarded the Society's Silver Gilt Medal for his seedling hybrid orchids, *Laelio-Cattleya, G. S. Ball*, the result of a cross between *Cattleya Schroederae* and *Laelia cinnabarina*. This cross was made with a view of introducing the brilliant red color of *L. cinnabarina* into the large flowers of the *Cattleya*. The eight plants exhibited illustrated the variation between individuals of identical parentage.

At the May Show, R. & J. Farquhar & Company placed on exhibition their new Rambler rose, named by them the Farquhar Rose. It is a hybrid raised by Jackson Dawson of the Arnold Arboretum, and a cross between *Rosa Wichuraiana* and the Crimson Rambler. It is remarkably free in growth, with bright, shining green leaves, resembling very much the *Wichuraiana*. The flowers are double, somewhat larger than those of the Crimson Rambler, and of a very pleasing shade of salmon-pink. Undoubtedly this is one of the most valuable of this comparatively new class of roses. We considered this well worthy of the Society's Silver Gilt Medal, and we therefore made them this award.

While speaking of this rose another new one, *Dorothy Perkins*, of the rambler class should be mentioned. It was placed on exhibition July 12 by A. T. Story, but the exhibit was too limited to judge correctly of its merits. However, it was sufficient to prove it of great promise and we awarded it Honorable Mention, believing that as the variety develops it will be one of the most valuable of this class. Its seed parent was the same as the Farquhar Rose but of the Hybrid Perpetual variety. Mme. Gabrielle Luizet was used as pollen parent. The flowers are very double, larger than Crimson Rambler, and clear shell-pink in color.

A very fine white variety of *Cattleya Mossiæ*, named *Evelyn Sloane*, was exhibited May 17 by Alfred J. Loveless, gardener to

John Sloane, Esq., of Lenox, Mass. It was a beautiful flower and was awarded the Society's Silver Medal.

Another very fine *Cattleya* which seems never to have been shown here before is *C. majalis*. It was exhibited May 31 by Edward J. Mitton and received much attention. It was awarded the Bronze Medal.

At the Rhododendron Show, June 7, there were several new plants shown which received special awards. Jason S. Bailey showed the new palm, *Kentia Duckamii*, a promising species for which he was awarded Honorable Mention.

Among orchids there were three new ones all of much beauty; one from Oakes Ames and two from J. E. Rothwell. Mr. Ames' plant was *Cypripedium callosum* var. *Sanderiae* for which he received a Silver Medal. J. E. Rothwell showed the hybrid orchid *Laelio-Cattleya* × *Phœbe* var., and *Cypripedium* × *Mars* for which he was awarded a Silver Medal and a First Class Certificate of Merit respectively.

At the Saturday exhibition, July 5, four new plants were shown, the most important from a commercial point of view, at least, being the hybrid *Richardia* raised by Joseph Tailby & Son. It is the result of a cross between *R. albo-maculata* and *Elliottiana*. The plant retains the habit of the seed parent but is of larger growth. The flower is increased in size and shows also the influence of the pollen parent in color, which is changed from white to light yellow. The foliage retains the silvery spots common to both parents, giving the plant a very brilliant effect, particularly when used for bedding out among sub-tropical plants. We consider this one of the most distinct new plants and worthy of the Society's Silver Medal, which was awarded.

The other three new plants were *Cypripediums*, all of great merit, but the one shown by J. E. Rothwell under the name of *Cypripedium* × *Cowleyanum* (*C. Curtisii* × *niveum*), was particularly interesting. This with *Cypripedium Mahleriae* var. *platytaenium* from Henry T. Clinkaberry were awarded Bronze Medals, while *Cypripedium* × *I'Ansonii* (*C. Morganae* × *C. Rothschildianum*), was awarded a First Class Certificate of Merit.

Another fine hybrid *Cypripedium* was shown by Mr. J. E. Rothwell on Saturday, July 12, under the name of Lord Derby (*C.*

Rothschildianum × *superbiens*), for which a First Class Certificate of Merit was awarded.

Still another new plant of unusual merit was shown by Mr. M. H. Walsh on July 26. This was a seedling hydrangea to which he has given the name *Superba*. It is the result of a cross between *H. Otaksa* and *H. cyanoclada*. The plant shown was the original one and was a mass of flowers. It seems to be exceedingly free flowering and the flowers range in color from pink to deep blue, resembling in this respect the colors seen in *H. Cyanoclada*. They are very thick and leathery in texture. This plant is particularly interesting for, so far as we can learn, it is the only instance on record where hydrangeas of this class have been raised from seed, and the fact that this was the result of hand fertilization, makes it of still greater interest. We awarded Mr. Walsh the Society's Silver Gilt Medal for this unique plant.

August 23, Mr. J. E. Rothwell brought in another new seedling orchid, *Laelio-Cattleya* × *Edmund Rothwell* (*C. Amethystoglossa* × *L. cinnabarina*), for which he received Honorable Mention. Although this showed little improvement over its parents it was interesting from the fact that it showed no trace of the bright color of the pollen parent but was much the same color as the seed parent, though lacking the spots seen in that species.

August 30, there was an interesting exhibit of American raised seedling orchids from the collection of E. V. R. Thayer, Esq., of Lancaster, Mass. It consisted of twelve plants representing nine distinct crosses, many of which had special merit. At various times during past years exhibits of individual plants and similar collections from this same source have been made, which with this display, make a record far surpassing all others in this line of work; the hybridization of the more difficult species. In recognition of this original work on the part of the gardener, Mr. E. O. Orpet, and the encouragement afforded this important work by Mr. Thayer, we have awarded the Society's Gold Medal. One plant in this exhibit was awarded a First Class Certificate of Merit, it being new to science, as well as possessing much individual beauty. It is the result of a cross between *Laelia tenebrosa* and *Cattleya Gaskelliana alba*, having been named *Laelio-Cattleya* × *Gladys*. The flower is a pleasing shade of lemon-yellow in color with a lip of lilac-rose and prettily veined.

New Seedling Hydrangea "Superba": M. H. Walsh.

Mr. Orpet describes the other varieties in the collection as follows:—

"*Laelio-Cattleya* × *Proserpine* (*L. Dayana* × *Cattleya velutina*), a variety with delightful perfume and brightly colored flowers, the two plants shown showing considerable variation in coloring.

Cattleya × *Atalanta* (*C. Leopoldii* × *C. gigas Sanderiana*), a handsome plant bearing a seven-flowered spike of inflorescence, each four and one-half inches across, of a beautiful light rose color, with a suffusion through the petals of a deeper shade. This handsome cross promises well for the future, producing so large a number of blossoms when first flowering.

Cattleya × *Patrocinii* (*C. Harrisonæ* × *C. Leopoldii*); this was interesting as proving the origin of a cattleya sent from Brazil as a new species, but its origin being suspected of a hybrid nature, has been proved by crossing in cultivation the two species as above that occur together in a state of nature. It is also a fine acquisition as a garden plant, the bronze of *C. Leopoldii* being suffused with the rose color of the other parent, the whole flower being four inches across, beautifully spotted, nine of them on one spike.

Cattleya × *interglossa* (*C. intermedia* × *C. amethystoglossa*). A plant was shown carrying two five-flowered spikes of lilac-pink flowers with the spotting of *C. intermedia* on the petals and sepals, and the rich amethyst lip of the other parent. It is a useful variety for producing cut flowers, owing to its free flowering properties and vigor.

Laelio-Cattleya × *C. G. Roebling* (*Cattleya Gaskelliana* × *Laelia purpurata*), a stately and handsomely colored hybrid with flowers eight inches in diameter, sweetly scented, combining the fine features of the two parents to a marked degree.

Laelia × *nigrescens* (*L. pumila* × *L. tenebrosa*); this cross was again shown in two distinct forms from that originally exhibited, a characteristic of this combination of parents being a wide variation.

Laelio-Cattleya × *Bletchleyensis* (*Laelia tenebrosa* × *Cattleya gigas Sanderiana*). This plant showed plainly the value of using as parents in crossing the best obtainable forms of species as subjects to work with, the influence of this distinct type of *C.*

gigas being plainly discernible in the finely developed lip and its rich coloring of deep bronze-crimson, and the lighter shade of the same color in sepals and petals.

Laelia × *Amœna* (*L. Dayana* × *L. anceps Stella*). Two plants were included in the exhibit, of widely different coloring, one being remarkable for its deep purple-crimson through the whole flower, while in the other form this rich coloring was present only in the lip, making a pleasing contrast to the lighter rose sepals. It is a plant that shows the *L. anceps* plainly in the growth, but the flower stem is reduced from that of the length of *L. anceps* to a height of about twelve inches, while *Laelia Dayana* leaves its impress plainly in the rich coloring of the lip which also has the raised deep purple lines of *L. Dayana.*"

At the Annual Exhibition September 11, several new plants were shown, four of them orchids. The most interesting of these being a hybrid zygopetalum, *Z. Roblingianum* (Z. *costratum* × *Z. Gauthierii*), from Henry T. Clinkaberry of Trenton, N. J., who entered this in competition for the best American seedling orchid other than cypripedium. This won the highest prize awarded, a Silver Medal.

The others, all of which were awarded Honorable Mention, were *Laelia grandis tenebrosa*, *Summitosa*, from Lager & Hurrell of Summit, N. J. *Cypripedium Fairy Queen* and *Laelio-Cattleya C. H. Holmes*; *Lelia purpurata* × *Cattleya Schilleriana*, from J. E. Rothwell. Lager & Hurrell also received a First Class Certificate of Merit for a deep colored variety of *Cattleya Hardyana.*

Honorable Mention was also awarded to Jason S. Bailey for a new variety of *Alocasia Wavriniana*, to W. A. Manda, for a new rose, a hybrid between American Beauty and Jersey Beauty, and to D. F. Roy for a seedling canna, *Mrs. E. S. Converse.*

W. A Manda was awarded a Silver Medal for a fine new form of the California privet, *Ligustrum ovalifolium.* It is beautifully variegated with golden yellow and seems to be well fixed. It should make a valuable addition to the shrubs with golden foliage.

Dracœna lantuginosa was shown by Col. Charles Pfaff and awarded a First Class Certificate Merit. It is a fine plant in the way of *D. indivisa.*

A. F. Estabrook showed a small but well grown plant of the new fern, *Adiantum Charlottæ* for which a First Class Certificate of Merit was awarded. This is one of the most beautiful of the many forms of *A. cuneatum*, much like the variety *gracilimum*, but much stronger and better in habit.

October 4, the Blue Hill Nurseries sent in a new hardy grass, *Arrhenatherum bulbosum variegatum* for which a First Class Certificate of Merit was awarded. It is a very pretty, dwarf grass which should be useful for edgings.

J. E. Rothwell showed a new seedling orchid, *Laelia* × *Oweniana* (*L. Dayana* × *L. xauthina*), for which he received Honorable Mention. He also showed the rare *Cypripedium Sanderianum*, the only true cypripedium with long string-like petals. This is a most difficult subject, but its possibilities for hybridizing purposes are many, and some fine novelties are looked for from this source. We deemed this plant worthy of being awarded the Silver Medal.

There were brought to the Chrysanthemum Show two new orchids, one in competition for the best American raised, seedling orchid. It was *Cattleya* × *Rothwelliæ* (*C. Bowringiana* × *C. Eldorado*) by J. E. Rothwell; this won the third prize, a Bronze Medal. The other was *Cattleya* × *mollis*, shown by James Wheeler. The plant was one of a lot of seedlings raised by E. O. Orpet from *Cattleya Gaskellina* × *C. superba splendens*. It is a beautiful variety and was awarded the Society's Silver Medal.

At various times during the year plants have been exhibited which have shown unusual skill in their cultivation and, although exhibited under the name of the owners, we considered the cultural excellence due to the gardeners who grew them, and have recognized their skill by making cultural awards to them.

The first to be recognized in this way was a plant of *Oncidium Cavendishianum*, on March 8, from Col. Charles Pfaff, and grown by George Melvin, his gardener. The plant was remarkably well grown and showed unusual skill in handling this subject. He was awarded a First Class Certificate of Merit for superior cultivation. He also received the same award for a well-grown plant of *Odontoglossum lœve* on July 5.

The most remarkable plant that has come under our notice from a cultural point of view was a magnificent basket of *Dendrobium nobile* exhibited by Mrs. John C. Whitin at the Spring Show on March 19. The plant was entered in competition for specimen plant of orchid and won the first prize, but in addition to this we considered it to be so well grown that much honor is due to William McAllister, the gardener, and we therefore awarded him the Society's Silver Medal for superior cultivation, The plant was conceded to be the finest specimen of the kind ever shown before the Society.

Other awards of this nature were, First Class Certificate of Merit awarded to James Garthley, gardener to H. H. Rogers, on April 5, for *Cypripedium villosum*. On May 3, to J. Lawson, gardener to Edward J. Mitton, for a fine plant of *Brassia verrucosa*, carrying fourteen spikes of bloom. To D. F. Roy, gardener to E. S. Converse, on June 19, for a remarkable plant of *Pteris ensiformis* var., *Victoriæ*, showing well how handsome a plant this fern is capable of making under favorable conditions and proper treatment; and to Emil Johansson for a very finely grown *Cypripedium* × *Frau Ida Brandt* var., exhibited on July 5.

At the Rhododendron Show, June 7, Jason S. Bailey made a fine display of calceolaria, Golden Gem, which attracted much attention. We make mention of this, for the shrubby varieties seem to have been overlooked, as exhibition plants, previous to this. That this should not be so seems very evident from the great beauty of the plants shown by Mr. Bailey.

Some unusual features were introduced at the Annual Exhibition, September 11, one of which was the magnificent display of crotons from E. J. Mitton of Brookline, comprising over fifty varieties, many of which were new. The display occupied a prominent place on the main floor and was greatly admired. It was the most extensive display of these plants ever attempted here, and in consideration of this and the fine condition of the plants we awarded Mr. Mitton the Society's Silver Gilt Medal.

Another feature was the display of Miniature Gardens and Dwarfed Japanese Trees from the Yamanaka Company. The dwarfing process practised by the Japanese gardeners was illustrated by the series of trees ranging from the little, one year old

specimen, to comparatively immense trees of great age. This exhibit formed a striking contrast to the other displays, for on the one hand we had the oriental idea of perfection in the gardener's art and on the other the occidental.

The Chrysanthemum Show brought out some remarkable plants, fully equal to any previously shown. The acme of perfection in trained chrysanthemums seems to have been reached, and we can hope for nothing finer in this style of plants than those exhibited by Jason S. Bailey and Mrs. B. P. Cheney.

We would suggest, however, that as the chrysanthemum lends itself so naturally to decorative effects, that more attention be paid to methods of cultivation which will emphasize this to the best advantage, feeling that the public will be most appreciative of any departure in this direction. We would not encourage this method of culture to the exclusion of the present system, for there is ample room for both, and the skill of the gardener will be taxed to as great an extent to produce the artistically beautiful as it now is to produce the symmetrically beautiful.

Late in November, Mr. Peter Fisher entered with this committee his seedling carnation, *Mrs. Thomas W. Lawson*, in competition for the prospective prize offered by the Society for the best seedling flowering plant. This variety has been under observation for several years and is thoroughly known to us. We can therefore unhesitatingly recommend this plant for the prize as we consider it the most distinct break in carnations that has come to our notice.

PRIZES AND GRATUITIES AWARDED FOR PLANTS.

1902.

JANUARY 4.

PRIMULA SINENSIS.—Six plants in not less than six-inch pots:
1st, Mrs. J. L. Gardner, $4; 2d, Mrs. B. P. Cheney, $3; 3d, Mrs. B. P. Cheney, $2.

PRIMULA STELLATA.—Six plants in not less than six-inch pots:
1st, C. H. Souther, $3; 2d, Mrs. B. P. Cheney, $2.

PRIMULA OBCONICA HYBRIDS.—Six plants in not less than six-inch pots:
1st, Mrs. B. P. Cheney, $4; 2d, Mrs. B. P. Cheney, $3; 3d, Mrs. J. L. Gardner, $2.

FEBRUARY 8.

FREESIAS.—Six pots or pans:
1st, Col. C. Pfaff, $5.

Gratuities:—

Mrs. J. L. Gardner, *Primula Sinensis alba plena*, $2.
Mrs. B. P. Cheney, Thirteen plants of *Primula obconica*, $6.

SPRING EXHIBITION.

MARCH 19, 20, 21, 22 AND 23.

Theodore Lyman Fund.

INDIAN AZALEAS.—Specimen plant, named:
1st, Dr. C. G. Weld, $8.

BEGONIA GLOIRE DE LORRAINE.—Display:
1st, Mrs. B. P. Cheney, $15.

Society's Prizes.

ERICAS.—Six, not less than three species:
1st, Dr. C. G. Weld, $6.

ORCHID.—Single Plant:
1st, Mrs. J. C. Whitin, *Dendrobium nobile*, $12; 2d, W. P. Winsor, *Dendrobium nobile*, $10; 3d, Mrs. J. L. Gardner, *Phajus grandiflorus*, $6.

STOVE OR GREENHOUSE PLANTS.—Specimen, in bloom, other than Azalea or Orchid:
1st, Mrs. J. L. Gardner, *Acacia heterophylla*, $6; 2d, Dr. C. G. Weld, *Erica melanthera*, $4.

HARD-WOODED GREENHOUSE PLANTS.—Four, in bloom:
1st, Dr. C. G. Weld, $10.

HARDY FLOWERING DECIDUOUS SHRUBS, FORCED.—Four, of four distinct species, named:
1st, Bussey Institution, $8; 2d, Mrs. J. L. Gardner, $5.

HARDY PRIMROSES.—Twelve plants of distinct varieties:
1st, Dr. C. G. Weld, $6; 2d, Mrs. J. L. Gardner, $4; 3d, Mrs. J. L. Gardner, $2.

HARDY POLYANTHUSES.—Twelve plants of distinct varieties:
1st, Mrs. J. L. Gardner, $6.

CYCLAMENS.—Ten plants:
1st, Mrs. B. P. Cheney, $15; 2d, C. H. Souther, $12; 3d, Mrs. B. P. Cheney, $10.

Ten plants, in not over seven-inch pots:
1st, G. F. Fabyan, $8; 2d, Mrs. B. P. Cheney, $6; 3d, G. F. Fabyan, $4.

Single plant:
1st, C. H. Souther, $5; 2d, Mrs. B. P. Cheney, $4.

CINERARIAS.—Six varieties:
1st, E. J. Mitton, $10; 2d, Mrs. B. P. Cheney, $8; 3d, Mrs. J. L. Gardner, $6; 4th, Dr. C. G. Weld, $5.

Three varieties:
1st, Mrs B. P. Cheney, $6; 2d, Mrs. B. P. Cheney, $5; 3d, Mrs. J. L. Gardner, $4.

Single plant:
1st, Mrs. J. L. Gardner, $3; 2d, E. J. Mitton, $2; 3d, Mrs. B. P. Cheney, $1.

HYACINTHS.—Twelve named varieties, in pots; one in each pot:
1st, Dr. C. G. Weld, $8; 2d, Bussey Institution, $5; 3d, E. S. Converse, $3.

Six named varieties:
1st, E. S. Converse, $5; 2d, Bussey Institution, $4; 3d, Mrs. J. L. Gardner, $3.

Single named bulb:
1st, Bussey Institution, $2; 2d, Mrs. J. L. Gardner, $1.

Three pans, not to exceed twelve inches, ten bulbs of one variety in each:
1st, Dr. C. G. Weld, $6; 2d, Mrs. J. L. Gardner, $4.

Two pans, not to exceed twelve inches, ten bulbs of one variety in each:
1st, Mrs. J. L. Gardner, $4; 2d, Mrs. J. L. Gardner, $3; 3d, Dr. C. G. Weld, $2.

Single pan, not to exceed twelve inches, with ten bulbs of one variety:
1st, Mrs. J. L. Gardner, $3; 2d, Bussey Institution, $2; 3d, Mrs. J L. Gardner, $1.

TULIPS.—Six eight-inch pans, nine bulbs of one variety in each:
1st, W. S. Ewell & Son, $6; 2d, W. S. Ewell & Son, $4; 3d, Bussey Institution, $2.

Three eight-inch pans, nine bulbs of one variety in each:
1st, E. S. Converse, $3; 2d, W. S. Ewell & Son, $2; 3d, Bussey Institution, $1.

Three ten-inch pans, twelve bulbs of one variety in each:
1st, Dr. C. G. Weld, $5; 2d, E. S. Converse, $4; 3d, W. S. Ewell & Son, $3; 4th, W. S. Ewell & Son, $2.

POLYANTHUS NARCISSUS.—Four seven-inch pots, four bulbs in each, distinct varieties:
1st, Dr. C. G. Weld, $4.

JONQUILS.—Six pots or pans, not exceeding eight inches, the number of bulbs in each to be at the discretion of the grower:
1st, Dr. C. G. Weld, $4; 2d, W. S. Ewell & Son, $3; 3d, W. S. Ewell & Son, $2.

NARCISSUSES.—Six eight-inch pans, distinct varieties, single or double:
1st, Dr. C. G. Weld, $6; 2d, W. S. Ewell & Son, $4.

Three eight-inch pans:
1st, W. S. Ewell & Son, $3; 2d, Dr. C. G. Weld, $2.

LILY OF THE VALLEY.—Six pots or pans, not exceeding eight inches:
1st, Bussey Institution, $4; 2d, W. S. Ewell & Son, $3; 3d, P. B Bradley, $2.

CROCUSES.—Three boxes, each eight by twenty inches, three distinct varieties:
1st, Bussey Institution, $3; 2d, W. S. Ewell & Son, $2; 3d, Bussey Institution, $1.

IXIAS.—Six pots or pans, in varieties:
1st, Dr. C. G. Weld, $5.

TRITONIAS.—Six pots or pans, in varieties:
1st, Dr. C. G. Weld, $5.

ROMAN HYACINTHS.—Six eight-inch pans, ten bulbs in a pan:
1st, Dr. C. G. Weld, $4; 2d, W. S. Ewell & Son, $2; 3d, Bussey Institution, $1.

GENERAL DISPLAY OF SPRING BULBS AND PLANTS:—All classes:
1st, Bussey Institution, $30; 2d, W. S. Ewell & Son, $20.

Gratuities:—

N. F. Comley, Azalea, $1.
E. E Riley, Hybrid Primulas, $2.
R. & J. Farquhar & Co., Display of Bays, Palms, and Cyclamen, $35.
Harvard Botanic Garden, Display of Cyclamen, *Primula obconica*, *Cœlogyne*, and *Lachenalias*, $25.
J. S. Bailey, Display of Palms, Cinerarias, Cyclamens, etc., $25.
Bussey Institution, Forced Hardy Herbaceous Plants and Shrubs, $10.

MAY 10.

CALCEOLARIAS.—Six varieties, in pots:
1st, Mrs. B. P. Cheney, $10; 2d, G. F. Fabyan, $8; 3d, Mrs. B. P. Cheney, $6.
Single plant:
1st, Mrs. B. P. Cheney, $3; 2d, G. F. Fabyan, $2.

Gratuities:—

J. E. Rothwell, Display of Orchids, $12.
J. E. Little, *Phyllocactus speciosa rosea*, $1.

RHODODENDRON EXHIBITION.

JUNE 7 (*Changed from June 6, 7 and 8*)

ORCHIDS.—Display, arranged for effect, with foliage plants, in a space eight feet by five feet:
1st, J. S. Bailey, $30; 2d, J. E. Rothwell, $25.

Gratuities:—

E. J. Mitton, Display of Pelargoniums, $10.
J. S. Bailey, Display of Shrubby Calceolaria Golden Gem, $5.
J. L. Little, *Campanula Medium calycanthema*, $2.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 19 AND 20 (*Changed from June 24 and 25*).

DECORATIVE PLANTS.—Group, named, arranged for effect, covering one hundred and fifty square feet:
1st, Mrs. J. L. Gardner, $30; 2d, E. S. Converse, $25.
GLOXINIAS.—Six plants in not less than eight-inch pots:
1st, J. L. Little, $10; 2d, Mrs. J. L. Gardner, $6; 3d, Mrs. J. L. Gardner, $3.
ORCHIDS.—Six plants, of six named varieties, in bloom:
1st, J. E. Rothwell, $15.
Three plants, of three named varieties, in bloom:
1st, E. J. Mitton, $10; 2d, J. E. Rothwell, $8.
Single specimen, named, in bloom:
1st, H. A. Wheeler, $5; 2d, J. E. Rothwell, $3.

Gratuities:—

E. S. Converse, Tuberous Begonias, $8.
A. F. Estabrook, Display, $5.

JULY 5.

Gratuity:—

E. J. Mitton, *Oncidium incurvum* and *Cattleya Gaskelliana*, $2.

AUGUST 9.

Gratuity:—

E. J. Mitton, *Cattleya Dowiana chrysotoxa* and *C. Gaskelliana*, $2.

AUGUST 16.

Gratuities:—

J. E. Rothwell, Collection of Cypripediums, $8.
E. J. Mitton, *Oncidium papilio*, $1.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 11, 12, 13 AND 14.

PALMS.—Pair, in pots or tubs not less than eighteen inches in diameter:
1st, J. S. Bailey, $12; 2d, Mrs. J. L. Gardner, $8.
Pair, in pots or tubs not more than fourteen inches in diameter:
1st, J. S. Bailey, $8; 2d, A. F. Estabrook, $6.

GREENHOUSE PLANTS.—Best finished group containing foliage plants of all descriptions, arranged for effect, covering two hundred square feet:
1st, J. S. Bailey, $50; 2d, Mrs. J. L. Gardner, $35; 3d, E. S. Converse, $25.
Six Greenhouse and Stove plants, decorative specimens of different named varieties, two crotons admissible:
1st, J. S. Bailey, $25; 2d, Mrs. J. L. Gardner, $20; 3d, E. S. Converse, $15.

CENTRE PIECE FOR TABLE. — For fifteen covers, living plants, in one receptacle:
1st, J. E. Rothwell, $10; 2d, E. J. Mitton, $8.

FERNS.—Five named varieties, no Adiantums admissible:
1st, E. S. Converse, $10; 2d, A. F. Estabrook, $6.
Specimen, other than Tree Fern:
1st, J. S. Bailey, $4; 2d, A. F. Estabrook, $3.

ADIANTUMS.—Five named varieties:
2d, A. F. Estabrook, $5.

DRACÆNAS.—Six named varieties:
1st, J. S Bailey, $8; 2d, Mrs. J. L. Gardner, $5.

CROTONS.—Twenty-five plants, not less than eighteen named varieties, in not less than six-inch pots:
1st, J. S. Bailey, $12; 2d, Mrs. J. L. Gardner, $8.

BEGONIA REX.—Ten pots of ten named varieties:
1st, E. S. Converse, $10; 2d, E. J. Mitton, $8; 3d, Mrs. J. L. Gardner, $6.

OUVIRANDRA FENESTRALIS.—1st, Mrs. J. L. Gardner, $6; 2d, E. S. Converse, $4.

Gratuities:—

J. E. Rothwell, Collection of Orchids, $10.
Lager & Hurrell, " " " $8.
E. J. Mitton, " " " $2.
C. H. Souther, Display of Platyceriums, $4.
Dr. A. H. Flower, *Nephrolepis exaltata*, $2.
R. & J. Farquhar & Co., Display of Foliage Plants, $20.
W. H. Lincoln, Group of Foliage Plants, $12.
Mrs. J. L. Gardner, Display of Flowering Plants, $5.
A. F. Estabrook, Bambusa, $2.
Yamanaka & Co., Display of Miniature Gardens and Dwarf Japanese Trees, $30.

CHRYSANTHEMUM SHOW.

NOVEMBER 6, 7, 8 AND 9.

CHRYSANTHEMUMS.—Display of eight named plants, any or all classes, named varieties:
1st, J. S. Bailey, $60; 2d, Mrs. B. P. Cheney, $45; 3d, E. S. Converse, $35.

Display of ten named plants, any or all classes, distinct varieties, in not exceeding nine-inch pots of ordinary form.
1st, W. Hunnewell, $35; 2d, E. S. Converse, $25.

Three Japanese Incurved:
1st, Mrs. B. P. Cheney, $12.

Three Reflexed; distinct named varieties:
1st, Mrs. B. P. Cheney, $12; 2d, E. S. Converse, $10.

Specimen Japanese Incurved; named variety:
1st, J. S. Bailey, $6; 2d, E. W. Converse, $5; 3d, J. S. Bailey, $4.

Specimen Reflexed, named variety:
1st, Mrs. B. P. Cheney, $6; 2d, E. S. Converse, $5; 3d, W. Hunnewell, $4.

Specimen Anemone Flowered, named variety:
1st, J. S. Bailey, $6; 2d, H. H. Rogers, $5; 3d, E. S. Converse, $4.

Specimen Pompon, named variety:
1st, E. S. Converse, $4.

Twelve plants, of twelve different varieties, grown to one stem and bloom, in not over six-inch pots, preference being given to plants not more than three feet in height:
1st, E. A. Clark, $8; 2d, E. S. Converse, $6.

Six plants grown as above, but all of one color, Red:
1st, E. A. Clark, $4; 2d, E. A. Clark, $3; 3d, E. S. Converse, $2.
White:
1st, E. A. Clark, $4; 2d, E. S. Converse, $3.
Pink:
1st, E. A. Clark, $4; 2d, E. S. Converse, $3.
Yellow:
1st, E. A. Clark. $4; 2d, E. A. Clark, $3; 3d, E. S. Converse, $2.
Any other color:
1st, E. A. Clark, $4; 2d, E. S. Converse, $3.
Group of Chrysanthemums, arranged for effect, with palms and decorative foliaged plants, limited to one hundred square feet:
1st, Mrs. J. L. Gardner, $25.

Gratuities:—

E. S. Converse, Standard Chrysanthemums, twelve plants, $18.
W. Hunnewell, Display of Chrysanthemums, $6.
E. W. Converse, Chrysanthemum Pink Ivory, $2.
L. H. Foster, Display of *Nephrolepis Anna Foster*, $5.
F. R. Pierson & Co., *Nephrolepis Piersoni*, $5.
W. Hunnewell, *Salvia leucantha*, $3.
Mrs. J. L. Gardner, Seedling Asparagus, $3.
Lager & Hurrell, Display of Orchids, $20.
W. Hunnewell, Display of *Oncidium ornithorhynchum*, $5.
R. & J. Farquhar & Co., Display of Palms, Bay Trees, Araucarias, etc., $30.

SOCIETY'S GOLD MEDALS.

Spring Exhibition, March 19–23. F. R. Pierson & Co., for *Nephrolepis Piersoni*.
August 30. E. V. R. Thayer, for American Raised Seedling Orchids.

SOCIETY'S SILVER GILT MEDALS.

April 5. E. O. Orpet, for *Lælio-Cattleya*, G. S. Ball.
May 10. R. & J. Farquhar & Co., for The Farquhar Rose.
July 26. M. H. Walsh, for Seedling *Hydrangea superba*.
Annual Exhibition of Plants and Flowers, September 11–14. E. J. Mitton, for Display of Crotons.

SOCIETY'S SILVER MEDALS.

March 1. H. H. Rogers, for *Saxifraga sarmentosa tricolor superba*.
" " H. H. Hunnewell, for *Odontoglossum Midgleyanum*.
Spring Exhibition, March 19–23. W. McAllister, for Superior cultivation of *Dendrobium nobile*.

May 17. A. J. Loveless, for *Cattleya Mossiæ* var. *Evelyn Sloane.*

Rhododendron Exhibition, June 7. O. Ames, for *Cypripedium callosum* var. *Sanderæ.*

" " " " J. E. Rothwell, for *Lælio-Cattleya* × *Phœbe* var.

July 5. J. Tailby & Son, for Seedling *Richardia.*

Annual Exhibition of Plants and Flowers, September 11–14. W. A. Manda, for Golden variegated Privet.

Annual Exhibition of Plants and Flowers, September 11–14. H. T. Clinkaberry, for *Zygopetalum* × *Rœblingianum.*

October Exhibition of Fruits and Vegetables, October 3 and 4. J. E. Rothwell, for *Cypripedium Sanderianum.*

Chrysanthemum Show, November 6–9. J. Wheeler, for *Cattleya mollis.*

SOCIETY'S BRONZE MEDALS.

May 31. E. J. Mitton, for *Lælia majalis.*

July 5. J. E. Rothwell, for *Cypripedium Cowleyanum.*

" " H. T. Clinkaberry, for *Cypripedium Mahlerœ.*

Chrysanthemum Show, November 6–9. J E. Rothwell, for *Cattleya Rothwelliæ.*

FIRST CLASS CERTIFICATES OF MERIT.

March 1. J. E. Rothwell, for *Cypripedium Edmund Rothwell.*

" 8. G. Melvin, for Superior cultivation of *Oncidium Cavendishianum.*

Spring Exhibition, March 19–23. L. H. Foster, for *Nephrolepis Fosteriana.*

" " " " Harvard Botanic Garden, for *Richardia Pentlandii.*

" " " " W. P. Winsor, for *Cœlogyne pandurata.*

April 5. J. Garthley, for Superior cultivation of *Cypripedium villosum.*

May 8. J. Lawson, for Superior cultivation of *Brassia verrucosa.*

Rhododendron Exhibition, June 7. J. E. Rothwell, for *Cypripedium Mars.*

Rose and Strawberry Exhibition, June 19 and 20. D. F. Roy, for Superior cultivation of *Pteris ensiformis* var. *Victoriæ.*

July 5. E. Johansson, for Superior cultivation of *Cypripedium* × *Frau Ida Brault* var.

" " O. Ames, for *Cypripedium l'Ansoni.*

" " G. Melvin, for Superior cultivation of *Odontoglossum lœve.*

" 12. J. E. Rothwell, for *Cypripedium* × *Lord Derby.*

August 30. E. O. Orpet, for *Lælio-Cattleya Gladys.*

Annual Exhibition of Plants and Flowers, September 11-14.

Col. C. Pfaff, for *Dracœna lantuginosa.*

Lager & Hurrell, for *Cattleya Hardyana*, deep colored variety.

A. F. Estabrook, for *Adiantum Charlottæ.*

October Exhibition of Fruits and Vegetables, October 3 and 4. Blue Hill Nurseries, for *Arrhenatherum bulbosum variegatum.*

HONORABLE MENTION.

Spring Exhibition, March 19–23.

R. & J. Farquhar & Co., for *Schizanthus Wiestoniensis.*

M. H. Walsh, for Seedling Rambler Rose Fairy Queen.

M. H. Walsh, for Seedling Rambler Rose *La Fiemetta.*

Rhododendron Exhibition, June 7. J. S. Bailey, for *Kentia Duckhamii.*

July 12. A. T. Story, for Rambler Rose Dorothy Perkins.

August 23. J. E. Rothwell, for *Lælio-Cattleya* × *Edmund Rothwell.*

Annual Exhibition of Plants and Flowers, September 11-14.

Lager & Hurrell, for *Lælia grandis tenebrosa Summitosa.*

J. E. Rothwell, *Cypripedium Fairy Queen.*

J. S. Bailey, *Alocasia Warreniana.*

W. A Manda, New Hybrid Rose.

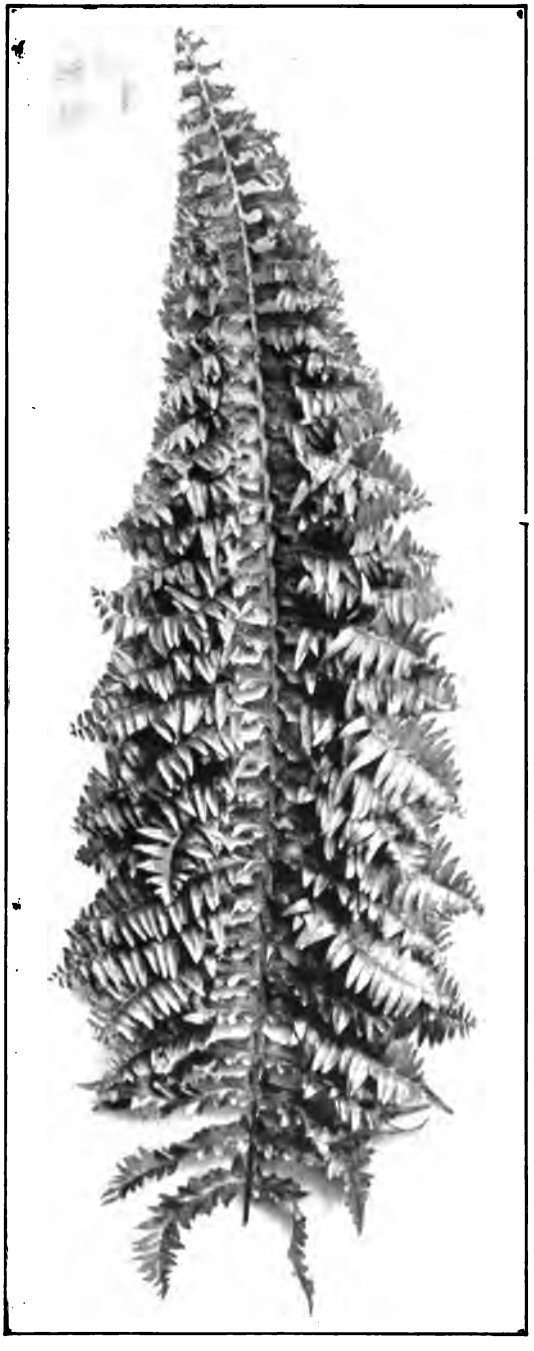
J. E. Rothwell, *Lælio-Cattleya* C. H. Holmes.

D. F. Roy, Seedling Canna, Mrs. E. S. Converse.

October Exhibition of Fruits and Vegetables, October 3 and 4. J. E. Rothwell, for *Lælia* × *Oweniana.*

Amount appropriated for prizes and gratuities for 1901		$2,000 00
Amount awarded for prizes and gratuities	$1,659 00	
Estimate cost of medals awarded	270 00	1,929 00
Leaving an unexpended balance of		$71 00

ARTHUR H. FEWKES,
JAMES WHEELER,
WILLIAM J. MARTIN,
ROBERT CAMERON,
ROBERT MELROSE GREY,
Committee on Plants.



Frond of the Pierson Fern.

Courtesy of the F. R. Pierson Company.

REPORT

OF THE

COMMITTEE ON FLOWERS

FOR THE YEAR 1902.

By J. WOODWARD MANNING, CHAIRMAN.

Your committee would report that the exhibits of the present year have been of a high standard and indicative of that renewal and increase in interest that was hoped for when the project of a new exhibition hall was undertaken. The quality of the exhibits has been good, the method of exhibition has neither improved nor deteriorated, the objectionable features of an unsatisfactory color scheme of walls has been a continued drawback to showing exhibits to the best advantage, but we hope that there may be a means to remove this objection in the near future.

The distance of the hall from the business section of the city has prevented a continuous and satisfactory attendance of a majority of the committee at the various meetings, and has caused changes by resignation and otherwise of members of this body. This is a matter which will regulate itself in time, but which has caused, during the present year, an unequal burden of work on the few members who were able to attend.

Death has removed from the membership of the Flower Committee Mr. James Comley, who has served many years on this and other committees, and who, by his constant attendance up to within a few weeks of his death, has been a most valued and conscientious member. His exhibits had been of such unusual extent and of such high character that the loss of the same to the Society

has been very noticeable, but aside from this the committee has met a severe loss by his death in losing the value of his wide knowledge and experience as a judge.

The attendance at the exhibitions has been largely augmented and commences to prove the wisdom of a change of location of the hall; the character of the attendance is changed somewhat, as would be expected, but while we miss some faces of flower-lovers that we have cause to regret, there is, on the other hand, nothing to regret in the personnel of our present visitors.

To review the exhibits in a general way, special mention should be made of the following :—

The exhibitions of Orchids on February 8 and at later dates have proved most attractive, and included many rare and interesting forms. Probably no class of exhibits attract greater interest, though the general knowledge of the plants is less extended than among other classes. The coterie of orchid experts in this vicinity is such as to insure a good exhibition whenever a fair prize is offered, and many unique and noteworthy forms are shown at times in variety and quantity probably unequaled in the United States.

Your committee is in favor of extended inducement in drawing out added competition in this class.

At the exhibition of February 8, Mrs. John L. Gardner gained first and Col. Charles Pfaff second prizes for two notable exhibits, and other notable collections were shown during the year.

The Spring Exhibition had many fine entries in Roses, Carnations, and Violets, of which the carnations showed the greatest advancement in the quality of the flowers, both from the standpoint of distinction in varieties and in the skill shown in culture. The advantage of showing carnations for a less period of the Spring Exhibition than formerly was made apparent by the increased freshness of the exhibition, under the new exhibition rules. Mr. M. H. Walsh of Wood's Hole was awarded Honorable Mention for a new seedling Rambler rose named "Miss Simplicity."

The Peony contests in June were spirited, and brought out a fine exhibit both in quality and variety. The Kelway Silver Gilt Medal for a collection of eighteen named varieties was awarded

to Arthur H. Fewkes, and the second prize of the Kelway Bronze Medal was gained by George Hollis. Other notable exhibits of peonies were shown, among which could be mentioned those of T. C. Thurlow, Joseph H. White, Mrs. John L. Gardner, Mrs. E. M. Gill, and A. F. Estabrook as competitors. George Hollis was awarded a First Class Certificate for peony "Maud L. Richardson," and Honorable Mention for peony "Goliath," and entered the latter for the Prospective Prize.

The Rhododendron Show, though suffering a loss of two prominent exhibitors of former years, still proved one of the noteworthy exhibits of the year, and while competition among the classes was less than previously, yet the general displays were well staged and abundant. During this exhibition was shown a notable collection of German iris by Frederick J. Rea, to whom a First Class Certificate was awarded for same.

The Rose and Strawberry Exhibition of June 19 and 20 recalled something of the successful exhibits of former years; a pleasant relief after two unfavorable years for Rose shows. The competition was close, and in many respects the character and variety of the exhibition have not been exceeded in former years. New competitors have entered the field, showing a healthy interest and future for Rose exhibitions to come. Other notable exhibits of this show were that of a new hardy herbaceous perennial *Campanula Persicifolia*, var. *Moerheimii*, a fine white, very double variety of the peach-leaved harebell, shown by Frederick J. Rea, and a large vase each of superbly grown foxgloves and delphiniums, shown by Mrs. John L. Gardner.

Never have Japanese irises been shown to greater advantage than at the exhibition of July 5. The high culture, great variety, and quality of the flowers showed what this class is capable of as a decorative, hardy plant. Hardy herbaceous perennials were exhibited from this date through the balance of the season, and while the restrictions limited the number of bottles in a display, the quality and variety shown were satisfactory in every way.

Special prizes were awarded at this exhibition for noteworthy exhibits in Honorable Mentions to Frederick J. Rea for the new Hybrid Wichuraiana rose "Dorothy Perkins," and to H. A. Wheeler for the Shasta daisy, and a First Class Certificate to

Arthur H. Brigham, of Weston, for a display of a fine white variety of *Cypripedium spectabile*.

From July 19 to the end of the season, hardy perennial phloxes were notable for the size and quality of the exhibits, the perfection of truss and habit, and the size and color of the individual flowers. It is a class that forms as valuable an adjunct to the hardy flower-border as the peony, and at a season which enables each to be appreciated without rivalry.

Dahlias were first exhibited on July 19, and from that time to the Chrysanthemum Show enlivened the hall with their wealth of color and form. Previous reports have indicated the trend of popularity to this flower, and this season's exhibitions have reiterated the popularity and decorative value of the class. A notable break in type was shown in an exhibit by R. & J. Farquhar & Company, known as the "collerette class," in the example of the variety, President Viger, for which a First Class Certificate was awarded. The Dahlia Show of the Annual Exhibition was finely staged by a goodly number of exhibitors, and was a success in every way.

Gladioli has been another class in which continued improvement in variety and form of flowers has been apparent, and the collection of F. A. Blake of the Gandevensis type of hybrids has been good, while that of Arthur Cowee, of Berlin, New York, has contained many fine forms of both the Gandevensis and Lemoinei type of hybrids. Mr. Cowee's collection was awarded two Honorable Mentions.

Aquatics, though not shown in the great variety of families that have appeared in exhibitions of former years, have been well represented, by the *Nymphæas* of which Henry A. Dreer, of Philadelphia, exhibited a notable collection on September 12, among which a First Class Certificate was awarded to the variety "Mrs. C. M. Ward," and Honorable Mention was made to the same party for the variety "Philadelphia."

Chrysanthemums were never shown in greater variety and in better quality than in 1902. The halls were all well filled, the competition was close, and the high standard of former years was fully maintained. The public interest in the exhibition was good, and the culminating flower show of the year gave promise in

quality, competition, and public interest to encourage continued effort to make the exhibits of the Massachusetts Horticultural Society a standard for the country.

Some notable exhibits of new carnations and roses were shown at the Chrysanthemum Show, for which Peter Fisher of Ellis was awarded a Silver Medal for carnation "Enchantress"; A. Roper, a Silver Medal for carnation "Fair Maid"; a Silver Medal to E. G. Asmus, of West Hoboken, N. J., for the new yellow rose, "F. Deegen," the so-called "Twentieth Century" rose; and an Honorable Mention to the H. Dale Estate of Brampton, Canada, for the rose "Canadian Queen." A First Class Certificate was also awarded to Walter Hunnewell for a new unnamed sport from the Oriental Glory chrysanthemum.

Your committee was granted an appropriation of $2,500 for the year 1902. They have awarded in cash prizes $1,798, leaving a balance of $702, out of which must be deducted the cost of the additional awards of four Silver Gilt Medals, seven Silver Medals, one Bronze Medal, six First Class Certificates, and eleven Honorable Mentions.

The following awards have been made during the year:—

PRIZES AND GRATUITIES AWARDED FOR FLOWERS.

1902.

JANUARY 4.

FREESIAS.—Vase of fifty spikes:
1st, Mrs. E. M. Gill, $2.
General Display.—Arranged for effect, in space of twelve or more square feet:
1st, Mrs. E. M. Gill, $2.
PRIMULA SINENSIS.—Display of fifty or more individual blooms:
1st, Mrs. E. M. Gill, $2; 2d, Mrs. J. L. Gardner, $1.

FEBRUARY 8.

CARNATIONS.—Display of cut blooms, with foliage, not less than six varieties in vases:
1st, M. A. Patten, $8; 2d, M. A. Patten, $6.

CAMELLIAS.—Display of named varieties, cut flowers with foliage, not less than twelve blooms, in not less than six varieties:
1st, Mrs. J. L. Gardner, $4.

Gratuities:—

A. Roper, Vase of Carnations, Fair Maid, $3.
Miss H. B. Winter, Carnations, $1.
Mrs. E. M. Gill, Cut Flowers, $2.

MARCH 1.

General Display.—Arranged for effect, in space of thirty or more square feet:
2d, Miss H. B. Winter, $4.
General Display.—Arranged for effect, in space of twelve or more square feet:
2d, Miss H. B. Winter, $1.

Gratuity:—

Mrs. E. M. Gill, Cut Flowers, $1.

SPRING EXHIBITION.

MARCH 19, 20, 21, 22 AND 23.

HYBRID PERPETUAL ROSES.—Twelve blooms, in not less than four named varieties:
1st, Col. C. Pfaff, $10.
Six blooms, not less than three named varieties:
1st, Col. C. Pfaff, $5.
Twelve blooms of Ulrich Brunner:
1st, Col. C. Pfaff, $10.
TENDER ROSES, IN VASES.—Twenty-five blooms of the Bride:
1st, J. Pritchard, $10.
Twenty-five blooms of Bridesmaid:
1st, J. Pritchard, $10.
Twenty-five blooms of Liberty:
1st, Waban Rose Conservatories, $12.
Twenty-five blooms of any other variety:
1st, Waban Rose Conservatories, $8.
CARNATIONS.—Vase of one hundred cut blooms, with foliage, not less than six varieties:
1st, J. S. Bailey, $8; 2d, P. B. Bradley, $6.
Twenty-five blooms of any named Crimson variety:
1st, M. A. Patten, $3.

Twenty-five blooms of any named Dark Pink variety:
1st, M. A. Patten, $3; 2d, J. H. White, $2.
Twenty-five blooms of any named Light Pink variety:
1st, M. A. Patten, $3; 2d, M. A. Patten, $2.
Twenty-five blooms of any named White variety:
1st, M. A. Patten, $3; 2d, M. A. Patten, $2.
Twenty-five blooms of any named White Variegated variety:
1st, M. A. Patten, $3.

VIOLETS.—Bunch of one hundred blooms of Lady Hume Campbell:
1st, N. F. Comley, $3; 2d, Col. C. Pfaff, $2.
Bunch of one hundred blooms of Marie Louise:
1st, N. F. Comley, $3.
Bunch of one hundred blooms of any other double variety:
1st, N. F. Comley $3; 2d, N. F. Comley, $2.
Bunch of one hundred blooms of any single variety:
1st, W. Simms, $3; 2d, N. F. Comley, $2.

Gratuities:—

Col. C. Pfaff, Display of Roses, $12.
Miss E. J. Clark, Vase of Carnations, $2.
Col. C. Pfaff, Display of Orchids, $5.
N. F. Comley, Display of Camellias, $4.
J. H. White, Polyanthus, $2.
Mrs. E. M. Gill, Display, $4.

APRIL 5.

General Display.—Arranged for effect, in space of thirty or more square feet:
1st, J. S. Bailey, $6; 2d, Mrs. E. M. Gill, $4.
General Display.—Arranged for effect, in space of twelve or more square feet:
1st, H. H. Rogers, $2; 2d, H. H. Rogers, $1.

MAY 10.

TULIPS.—Forty-eight blooms, not less than twelve named varieties:
1st, Dr. C. G. Weld, $4.

PANSIES.—Forty-eight blooms, not less than four varieties:
2d, Mrs. E. M. Gill, $4.
Gratuity:—
Mrs. E. M. Gill, Display of Cut Flowers, $3.

RHODODENDRON EXHIBITION.

JUNE 7. (*Changed from June 6, 7 and 8.*)

H. H. Hunnewell Fund.

RHODODENDRONS.—Twelve distinct varieties of unquestioned hardiness, named:
1st, Mrs. J. L. Gardner, $20.
Six distinct varieties of unquestioned hardiness, named:
1st, Mrs. B. P. Cheney, $10.
Six tender varieties, named:
2d, Mrs. J. L. Gardner, $4.
Three tender varieties, named:
1st, Mrs. J. L. Gardner, $4.
HARDY AZALEAS.—Six varieties, one vase of each:
1st, Mrs. J. L. Gardner, $3.
Cluster of trusses, one variety:
2d, Mrs. J. L. Gardner, $1.

Society's Prizes.

GERMAN IRISES.—Thirty-six vases of three trusses each, of not less than twelve varieties:
1st, Mrs. J. L. Gardner, $4.
HARDY PYRETHRUMS.—Display of thirty bottles, Single and Double, six or more varieties:
1st, A. McLaren, $6; 2d, W. J. Clemson, $4.
Vase of Flowers:
1st, Mrs. E. M. Gill, $4; 2d, Miss H. B. Winter, $3.

Gratuities:—

Mrs. B. P. Cheney, Display of Rhododendrons, $30.
Mrs. J. L. Gardner, " " " $12.
Hon. E. S. Converse, " " " $8.
W. J. Clemson, Vase of Pæonies, $5,
A. H. Fewkes, Display of Pæonies, $4.
C. W. Parker, Vase of *Iris pallida Dalmatica*, $1
W. H. Heustis & Son, *Kalmia latifolia*, $1.
Mrs. H. L. Higginson, Vase of *Clematis montana*, $1.
Blue Hill Nurseries, Hardy Perennials, $5.
J. S. Chase, Display, $2.
Mrs. E. M. Gill, Display, $2.

PÆONY EXHIBITION.

JUNE 14.

HERBACEOUS PEONIES.—Collection of thirty or more named varieties, Double:

1st, T. C. Thurlow, $12; 2d, G. Hollis, $10.

Collection of twelve or more named varieties:

1st, T. C. Thurlow, $6.

Specimen Bloom:

1st, J. H. White, $2; 2d, G. Hollis, $1.

Vase of blooms on long stems, arranged for effect in the Society's large China vases:

1st, Mrs. J. L. Gardner, $10; 2d, G. Hollis, $8; 3d, Mrs. E. M. Gill, $6; 4th, A. F. Estabrook, $4.

FOXGLOVES.—Twelve spikes:

1st, Mrs. J. L. Gardner, $3; 2d, Mrs. J. L. Gardner, $2; 3d, W. Whitman, $1.

Gratuities:—

O. B. Hadwen, Display of Pæonies, $5.
J. S. Chase, " " " $2.
Mrs. J. L. Gardner, Foxgloves, $2.
W. Whitman, " $1.
F. J. Rea, *Campanula persicifolia grandiflora*, $3.
Mrs. J. L. Gardner, Sweet Williams, $2.
Mrs. J. B. Lawrence, Lychnis, $1.
Dr. O. S. Paige, Pansies, $1.
Dr. O. S. Paige, Display of Roses, $2.
W. J. Clemson, Display of Roses and Gloxinias, $10.
Mrs. E. M. Gill, Display, $3.
Mrs. J. B. Lawrence, Display, $2.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 19 AND 20. (*Changed from June 24 and 25.*)

Theodore Lyman Fund.

HARDY ROSES.—Twenty-four distinct named varieties:

1st, J. H. White, $25; 2d, Miss E. J. Clark, $20.

Society's Prizes.

Sixteen named varieties, three of each variety:
1st, Dr. O. S. Paige, $15; 2d, Miss E. J. Clark, $10.

Twelve named varieties, three of each:
1st, A. F. Estabrook, $10.

Three named varieties, three of each:
1st, J. H. White, $3; 2d, Miss E. J. Clark, $2.

Twenty-four named varieties, one of each:
1st, Dr. O. S. Paige, $10.

Eighteen named varieties, one of each:
1st, J. H. White, $8; 2d, Miss E. J. Clark, $6; 3d, Mrs. J. L. Gardner, $4.

Twelve named varieties, one of each:
1st, Miss E. J. Clark, $6; 2d, J. H. White, $4.

Six named varieties, one of each:
1st, J. H. White, $4; 2d, Miss E. J. Clark, $3.

Twenty-four blooms of Mme. Gabriel Luizet:
1st, Miss E. J. Clark, $8; 2d, P. B. Bradley, $6; 3d, A. F. Estabrook, $4.

Six blooms of Baroness Rothschild:
1st, P. B. Bradley, $3; 2d, Dr. O. S. Paige, $2.

Six blooms of any other variety:
1st, P. B. Bradley, $4; 2d, A. F. Estabrook, $3; 3d, P. B. Bradley, $2; 4th, E. S. Converse, $1.

Best single bloom of any variety:
1st, P. B. Bradley, $2; 2d, Dr. O. S. Paige, $1.

General Display.—One hundred bottles of Hardy Roses, in the Society's racks, buds admissible;
1st, Mrs. E. M. Gill, $10; 2d, W. J. Clemson, $9; 3d, Dr. O. S. Paige, $8; 4th, Mrs. J. L. Gardner, $7; 5th, Miss E. J. Clark, $6; 6th, P. B. Bradley, $5.

Sweet Williams.—Display, eighteen vases of three trusses each, not less than six varieties:
1st, W. J. Clemson, $4; 2d, Mrs. J. L. Gardner, $3; 3d, W. E. Coburn, $2.

Vase of Flowers.—Best arranged:
1st, Mrs. E. M. Gill, $5; 2d, Miss H. B. Winter, $4.

Basket of Roses.—Arranged for effect:
1st, Mrs. E. M. Gill, $5.

Gratuities:—

Mrs. J. L. Gardner, Display of Roses, $4.
Mrs. E. M. Gill, Display of Roses, $4.
Mrs. E. A. Wilkie, Display of Roses and Nymphæas, $2.

W. J. Clemson, Sweet Williams, $2.
Mrs. J. L. Gardner, Display of Sweet Williams, $2.
G. Hollis, Display of Seedling Pæonies, $5.
J. S. Chase, Vase of Pæonies, $4.
Mrs. E. M. Gill, Vase of Pæonies, $2.
Mrs. J. L. Gardner, Vase of Foxgloves, $4.
Mrs. J. L. Gardner, Vase of Delphiniums, $3.
H. A. Wheeler, *Amaryllis Formosissima*, $1.
J. H. White, Collection, $2.

JULY 5. (*Changed from July 12.*)

IRIS KÆMPFERI.—Fifteen varieties, three of each:
1st, Mrs. J. L. Gardner, $6; 2d, T. C. Thurlow, $4.
Six varieties, three of each, in vases:
1st, Mrs. J. L. Gardner, $3; 2d, Mrs. J. L. Gardner $2.
SWEET WILLIAMS.—Auricula flowered, thirty spikes, of not less than six distinct varieties:
2d, W. J. Clemson, $2.
DELPHINIUMS.—Collection of twenty spikes, not less than five varieties:
1st, Mrs. J. L. Gardner, $5; 2d, C. Blomberg, $4.
Display, thirty vases, of three spikes each:
1st, Mrs. J. L. Gardner, $10.
HARDY HERBACEOUS FLOWERS.—Thirty bottles:
1st, Blue Hill Nurseries, $6; 2d, W. J. Clemson, $5.
VASE OF FLOWERS.—1st, Mrs. E. M. Gill, $4; 2d, Miss H. B. Winter, $3.

Gratuities:—

F. J. Rea, Display of Crimson Rambler Rose, $3.
W. J. Clemson, Sweet Peas, $3.
L. H Atkins, Shirley Poppies, $2.
W. J. Clemson, Collection of flowers, $3.
C Blomberg, " " " $1.
Mrs. E. M. Gill, Display, $2.

JULY 12. (*Changed from July 19.*)

HOLLYHOCKS.—Best display, single and double varieties, in flat dishes:
1st, E. L. Lewis, $5; 2d, J. S. Chase, $4.
SHIRLEY POPPIES.—Display:
1st, L. H. Atkins, $3; 2d, Mrs J. Lewis, $2.
VASE OF FLOWERS.—Best arranged:
1st, Mrs. E. M. Gill, $4; 2d, W. C. Winter, $3.

Gratuities:—

G. Hollis, Display of Perennial Phloxes, $1.
Mrs. E. M. Gill, Danebrog Poppies, $1.
Miss A. H. Warburton, Crimson Rambler Roses and Poppies, $1.
Col. C. Pfaff, Display of Hybrid Roses, $4.
W. J. Clemson, Collection of Roses and Gloxinias, $2.
W. J. Clemson, Display of Sweet Peas, named, $3.
E. L. Lewis, Sweet Peas, $1.
Mrs. J. B. Lawrence, Display of Dianthuses, $1.
B. P. Ware, Nymphæas, $1.
Blue Hill Nurseries, Display Herbaceous Plants and Cut Flowers, $3.
Mrs. J. B. Lawrence, Herbaceous Plants, Cut Blooms, $2.

JULY 19. (*Changed from July 26.*)

TUBEROUS BEGONIAS.—Collection, arranged with their own foliage, in flat dishes:
1st, E. S. Converse, $4.

HARDY AQUATIC FLOWERS.—Collection named:
1st, O. Ames, $8; 2d, Mrs. J. L. Gardner, $6.

General Display.—Arranged for effect, in space of twelve or more square feet:
1st, Mrs. E. M. Gill, $6; 2d, Miss H. B. Winter, $4.

Gratuities:

B. P. Ware, Display of Nymphæas, $1.
W. J. Clemson, Display of Perennial Phloxes, $2.
W. J. Clemson, Display of *Phlox Drummondi*, $1.
G. Hollis, Display of named Hardy Phloxes, $1.
E. L. Lewis, Display of Hollyhocks, $4.
W. J. Clemson, Sweet Peas, named, $2.
Mrs. J. Lewis, Display of Annual Poppies, $1.
B. F. Flanders, Display of Dahlias, $1.
J. E. Rothwell, Display of Cut Orchids, $6.

JULY 26. (*Changed from August 2.*)

SWEET PEAS.—Display of named varieties, filling thirty vases, arranged with their own foliage:
1st, W. J. Clemson, $6; 2d, E. L. Lewis, $4.

HARDY HERBACEOUS FLOWERS.—Thirty bottles:
1st, W. J. Clemson, $6; 2d, C. Blomberg, $5.

VASE OF FLOWERS.—For table decoration:
1st, Mrs. E. M. Gill, $4; 2d, Miss H. B. Winter, $3.

Gratuities:—

Blue Hill Nurseries, Display of Herbaceous Plants, $2.
C. Blomberg, " " " " $1.
Blue Hill Nurseries, Display of Perennial Phloxes, $1.
W. J. Clemson, " " " " $1.
Mrs. G. Duncan, " " " " $1.
G. Hollis, " " " " $1.
E. L. Lewis, Display of Hollyhocks, $2.
Mrs. E. M. Gill, Display of Roses, $1.
A. Nixon, Display of Cut Flowers, $1.

AUGUST 2. (*Changed from August 9.*)

PERENNIAL PHLOXES.—Twelve named varieties, one truss of each:
1st, T. C. Thurlow, $5; 2d, G. Hollis, $4.

ANTIRRHINUMS.—Display of thirty vases, three spikes in each, not less than ten varieties:
1st, Mrs. J. B. Lawrence, $3; 2d, W. J. Clemson, $2.

General Display.—Arranged for effect in space of thirty or more square feet:
1st, Mrs. E. M. Gill, $6; 2d, Miss H. B. Winter, $4.

General Display.—Arranged for effect, in space of twelve or more square feet:
1st, Mrs. J. Lewis, $2; 2d, Mrs. E. M. Gill, $1.

Gratuities:—

T. C. Thurlow, Display of Perennial Phloxes, $4.
W. J. Clemson, Display of Phloxes, $1.
B. F. Flanders, Display of Dahlias, $3.
F. A. Blake, Display of Gloxinias, $3.
Shady Hill Nursery Co., Display of Herbaceous Plants and Cut Flowers, $7.

AUGUST 9. (*Changed from August 16.*)

ANNUALS.—General Display, named, not less than fifty varieties, filling not less than one hundred and fifty bottles:
1st, E. S. Converse, $12; 2d, Mrs. J. L. Gardner, $10.

Gratuities:—

G. Hollis, Display of Perennial Phloxes, $1.
B. F. Flanders, Display of Dahlias, $2.
Mrs. J. B. Lawrence, Display of Dahlias, $1.

A. F. Schenkelberger, Display of named Gladioli, $1.
E. L. Lewis, Display of Sweet Peas and Roses, $1.
Mrs. E. M. Gill, Display of Cut Flowers, $4.
Mrs. J. B. Lawrence, Display of Cut Flowers, $1.

AUGUST 16. (*Changed from August 23.*)

MONTBRETIAS.—Display in Vases:
2d, Mrs. J. B. Lawrence, $2.

PERENNIAL PHLOXES.—General display, in not less than thirty vases:
1st, T. C. Thurlow, $8; 2d, G. Hollis, $6; 3d, Mrs. G. Duncan, $4.

Gratuities:—

W. Whitman, Display of Perennial Phloxes, $4.
J. B. Lawrence, Display of Dahlias, $2.
W. P. Lothrop, " " " $2.
R. P. Struthers, " " " $1.

AUGUST 23. (*Changed from August 30.*)

Theodore Lyman Fund.

ASTERS.—Large flowered, of all classes, fifty vases, not less than twelve varieties, three flowers in each vase:
1st, F. A. Blake, $6; 2d, W. Whitman, $5.

VICTORIA AND PEONY FLOWERED.—Thirty blooms, not less than twelve varieties:
1st, J. H. White, $4; 2d, W. Whitman, $3; 3d, F. A. Blake, $2.

SIMPLE.—Thirty blooms, not less than three varieties:
2d, E. S. Converse, $3.

POMPON.—Twenty-four cut plants, not less than six varieties:
1st, W. Whitman, $4.

HARDY HERBACEOUS FLOWERS.—Thirty bottles:
1st, Shady Hill Nursery, $6; 2d, C. Blomberg, $5.

Gratuities:—

Mrs. J. L. Gardner, Display of Asters, $3.
E. S. Converse, " " " $1.
C. Blomberg, Display of Herbaceous Plants, $1.
F. J. Rea, Display of Gladioli, $1.
W. Whitman, Display of Gladioli and Asters, $3.
W. P. Lothrop, Display of Asters and Dahlias, named, $3.
G. Hollis, two large vases of Cut Flowers, $1.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 11, 12, 13 AND 14.

Theodore Lyman Fund.

AQUATICS.—General Display of Nymphæas, Nelumbiums, Sedges, Papyrus, and other Aquatic Plants, arranged for effect, to include not less than twenty-five blooms of Nymphæas:
1st, O. Ames, $25.

GLADIOLI.—Display of named and unnamed varieties, filling one hundred vases, arranged for effect, with any foliage:
1st, W. P. Lothrop, $8.

Society's Prizes.

DAHLIAS.—Show, eighteen blooms, named varieties:
1st, W. C. Winter, $4; 2d, H. F. Burt, $3.

Fancy, eighteen blooms, named varieties:
1st, H. F. Burt, $4.

Cactus, twelve blooms, named varieties:
1st, H. F. Burt, $4; 2d, W. H. Symonds, $3; 3d, W. P. Lothrop, $2.

Decorative, twelve blooms, named varieties:
1st, W. C. Winter. $4; 2d, W. P. Lothrop, $3; 3d, H. F. Burt, $2.

Show, six blooms, named varieties:
1st, W. C. Winter, $2; 3d, W. C. Winter, $1.

Fancy, six blooms, named varieties:
1st, H. F. Burt, $2; 2d, H. F. Burt, $1.

Best single bloom, of any class, introduction of 1900 or later:
1st, W. P. Lothrop, $1.

Pompon, twelve vases of three blooms each, named varieties:
1st, J. K. Alexander, $3; 2d, W. C. Winter, $2; 3d, W. P. Lothrop, $1.

Single, twelve vases of three blooms each, named varieties:
1st, W. C. Winter, $2; 2d, H. F. Burt, $1.

General Display, one hundred or more bottles, in the Society's racks, arranged for effect:
1st, W. C. Winter, $12; 2d, J. K. Alexander, $10; 3d, Mrs. J. B. Lawrence, $8; 4th, W. G. Winsor, $6; 5th, W. H. Symonds, $4.

TROPÆOLUMS.—Display, with their foliage, filling twenty-five vases, not over eighteen blooms of one variety:
1st, Mrs. E. M. Gill, $3; 2d, E. S. Converse, $2.

MARIGOLDS.—Display of French and African, filling twenty-five vases:
1st, W. Whitman, $3; 2d, Mrs. J. L. Gardner, $2.

DOUBLE ZINNIAS.—Fifty flowers, not less than twelve varieties:
1st, Col. C. Pfaff, $3; 2d, Mrs. J. L. Gardner, $2.

CHINA ASTERS.—Display of Large Flowered, of all classes, not less than fifty vases, three flowers in each:

1st, Col. C. Pfaff, $8; 2d, Miss F. H. Breed, $6; 3d, W. Whitman, $4.

PERENNIAL ASTERS.— Collection of Native or Introduced species and varieties:

1st, Mrs. E. M. Gill, $5; 2d, Misses E. A. and M. S. Doran, $4.

DIANTHUSES.—Collection of Annual and Biennial varieties, filling thirty bottles:

1st, Mrs. J. B. Lawrence, $3.

ORNAMENTAL FRUITED HARDY TREES AND SHRUBS.—Collection of Cut Branches, named:

1st, Col. C. Pfaff, $5.

HARDY HERBACEOUS FLOWERS.—Thirty bottles:

1st, Blue Hill Nurseries, $6; 2d, Shady Hill Nursery, $5.

VASE OF FLOWERS.—For table decoration:

1st, Mrs. E. M. Gill, $4; 2d, Miss H. B. Winter, $3.

Gratuities:—

H. F. Burt, Display of Dahlias, $6.
N. W. T. Knott, " " " $2.
R. P. Struthers, " " " $2.
E. S. Converse, Display of China Asters, $1.
C. L. Hovey, Display of Marigolds, $1.
O. B. Hadwen, Display of Gladioli, $3.
F. J. Rea, Display of Gladioli and Perennial Asters, $1.
A. B. Howard, Collection of Petunias and Verbenas, $2.
G. McWilliams, Collection of Dipladenias, $5.
Mrs. H. L. Higginson, Vase of *Lilium Wallichianum Superbum*, $1.
Henry A. Dreer, Exhibit of Nymphæas, $10.
Henry A. Dreer, " " " $10.
Col. C. Pfaff, Collection of Hardy Cut Flowers and Shrubs, $2.
Mrs. E. M. Gill, Display of Cut Flowers, $4.

OCTOBER EXHIBITION OF FRUITS AND VEGETABLES.

OCTOBER 3 AND 4.

Gratuities:—

H. F. Burt, Display of Cactus, Fancy, and Show Dahlias, $10.
W. P. Lothrop, Display of Dahlias, $5.
H. F. Burt, Display of Show Dahlias, $4.
C. L. Hovey, Display of Dahlias, $4.
Mrs. E. M. Gill, " " " $4.

R. & J. Farquhar & Co., Display of Liliums, $6.
R. & J. Farquhar & Co., Display of Gladioli, $6.
Blue Hill Nurseries, Display of Herbaceous Flowers, $8.

CHRYSANTHEMUM SHOW.

NOVEMBER 6, 7, 8 AND 9.

Special Prizes.

Josiah Bradlee Fund.

CHRYSANTHEMUMS.—Twenty-five blooms, of twenty-five distinct varieties, named, a piece of plate or value in money:
1st, Mrs. B. P. Cheney, $18; 2d, Miss E. J. Clark, $12.
Six Vases of six named varieties, ten blooms each:
1st, Mrs. A. W. Spencer, $30; 2d, Miss E. J. Clark, $25.

Henry A. Gane Memorial Fund.

For the best twelve specimen blooms of any of the Seedling Chrysanthemums originated by the late Henry A. Gane:
1st, C. D. Sias, $20; 2d, Mrs. A. W. Spencer, $10.

Society's Prizes.

Twelve blooms, Japanese, named, in vases:
1st, Mrs. B. P. Cheney, $10; 2d, Miss E. J. Clark, $6.
Twelve blooms, Japanese Incurved, named, in vases:
1st, Mrs. B. P. Cheney, $10; 2d, Miss E. J. Clark, $6; 3d, P. B. Robb, $4.
Twelve blooms, Anemone, named, in vases:
1st, E. S. Converse, $8.
Six blooms, Incurved, named, in vases:
1st, E. S. Converse, $5.
Six blooms, Japanese, named, in vases:
1st, Miss E. J. Clark, $6; 2d, Mrs. B. P. Cheney, $4; 3d, P. B. Robb, $2.
Six blooms, Japanese Incurved, named, in vases:
1st, Mrs. B. P. Cheney, $6; 2d, J. J. Albright, $4; 3d, P. B. Robb, $2.
Six blooms, Reflexed, named, in vases:
1st, Mrs. B. P. Cheney, $6; 2d, J. J. Albright, $4; 3d, P. B. Robb, $2.
Six blooms, Anemone, named, in vases:
1st, E. S. Converse, $5; 3d, E. S. Converse, $2.
Six best varieties, named, introductions of the current year:
1st, Miss E. J. Clark, $6.

Vase of ten blooms, on long stems, Pink, named:
1st, Mrs. A. W. Spencer, $10; 2d, C. D. Sias, $8; 3d, Miss E. J. Clark, $6.

Vase of ten blooms, on long stems, Red, named:
1st, Mrs. A. W. Spencer, $10; 2d, Miss E. J. Clark, $8; 3d, Mrs. B. P. Cheney, $6.

Vase of ten blooms, on long stems, White, named:
1st, Mrs. A. W. Spencer, $10; 2d, Mrs. A. W. Spencer, $8; 3d, C. D. Sias, $6.

Vase of ten blooms, on long stems, Yellow, named:
1st, Mrs. A. W. Spencer, $10; 2d, C. D. Sias. $8; 3d, Miss E. J. Clark,

Vase of ten blooms, on long stems, any other color named:
1st, C. D. Sias, $10; 2d, Mrs. A. W. Spencer, $8; 3d, Mrs. B. P. Cheney, $6.

VIOLETS.—Collection of varieties, fifty blooms each:
1st, N. F. Comley, $5; 2d, Col. C. Pfaff, $4.

Gratuities:

E. N. Pierce & Sons, Four of the Society's large vases, of Chrysanthemums, $30.
Mrs. E. M. Gill, Display of Chrysanthemums, $12.
Mrs. A. W. Spencer, Display of Chrysanthemums, $10.
E. S. Converse, Display of Single and Pompon Chrysanthemums, $8.
Mrs. B. P. Cheney, Display of Chrysanthemums, $5.
G. A. Clark, Vase of Chrysanthemums, $3.
Col. Charles Pfaff, Display of Orchids, $6.
Patten & Co., Twelve vases assorted Carnations, $12.
S. J. Reuter, two vases of Carnations, $5.
G. J. Small, " " " " $4.
Little South Floral Co., Display of Carnations, $3.
H. A. Stevens & Co., Vase of Carnation, Gov. Wolcott, $1.
S. J. Goddard, Vase of Carnation, The Queen, $1.
C. Jurgens, Large vase of American Beauty Roses, $7.

SOCIETY'S SILVER GILT MEDALS.

February 8. Mrs. J. L. Gardner, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Spring Exhibition March 19–23. W. P. Winsor, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Chrysanthemum Show, November 6–9. Mrs. F. L. Ames, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

KELWAY SILVER GILT MEDAL.

(*Offered by Kelway & Son, Langport, England.*)

Pæony Exhibition, June 14. A. H. Fewkes, first prize for Collection of Herbaceous Pæonies, named varieties, single or double.

SOCIETY'S SILVER MEDAL.

February 8. Col. C. Pfaff, second prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Spring Exhibition, March 19–23. J. E. Rothwell, second prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Rose and Strawberry Exhibition, June 19 and 20. F. J. Rea, for *Campanula persicifolia Moerheimii*.

Chrysanthemum Show, November 6–9. O. Ames, second prize for Display of Orchids, named species and varieties, single or double.

Chrysanthemum Show. P. Fisher, for large vase of Carnation, Enchantress. (New.)

Chrysanthemum Show. A. Roper, for large vase of Carnation, Fair Maid. (New.)

Chrysanthemum Show. E. G. Asmus, for Twentieth Century Rose, F. Deegen.

KELWAY BRONZE MEDAL.

(*Offered by Kelway & Son, Langport, England.*)

Pæony Exhibition, June 14. G. Hollis, second prize for Collection of Herbaceous Pæonies, named varieties, single or double.

FIRST CLASS CERTIFICATES OF MERIT.

Rhododendron Exhibition, June 7. F. J. Rea, for Collection of German Irises, named.

Rose and Strawberry Exhibition, June 19 and 20. G. Hollis, for Pæony Maud L. Richardson.

Rose and Strawberry Exhibition, June 19 and 20. G. Hollis, for Pæony Goliath.

July 5. A. H. Brigham, for white variety of *Cypripedium spectabile*.

Annual Exhibition of Plants and Flowers, September 11–14. H. A. Dreer, for Nymphæa Mrs. C. W. Ward.

October Exhibition of Fruits and Vegetables, October 3 and 4. R. & J. Farquhar, for new type of single Dahlia, designated "Collerette Dahlia" named President Viger.

Chrysanthemum Show, November 6–9. W. Hunnewell, Sport from Chrysanthemum Oriental Glory, unnamed.

HONORABLE MENTION.

Spring Exhibition, March 19–23. M. H. Walsh, for Seedling Rambler Rose Miss Simplicity.

Rose and Strawberry Exhibition, June 19 and 20. G. Hollis, for Pæony Seedling No. 28.

July 5. F. J. Rea, for Rosa Wichuraiana hybrida Dorothy Perkins.

July 5. H. A. Wheeler, for Shasta Daisy.

July 19. G. Hollis, for Seedling Hardy Phlox Gaiety.

August 23. A. Cowee, for Display of Hybrid Gladioli.

Annual Exhibition of Plants and Flowers, September 11–14. H. A. Dreer, for Nymphæa Pennsylvanica.

Annual Exhibition of Plants and Flowers, September 11–14. A. Cowee, for Display of Groff's Hybrid Gladioli.

Annual Exhibition of Plants and Flowers, September 11–14. M. H. Walsh, for Seedling Perennial Phlox.

Annual Exhibition of Plants and Flowers, September 11–14. Floral Company, South Natick, for Carnation The Queen.

Chrysanthemum Show, November 6–9. H. Dale Estate, Brampton, Ontario, for new rose Canadian Queen.

J. Woodward Manning,
Michael H. Norton,
Kenneth Finlayson,
Frederick S. Davis,
James Comley.
} *Committee on Flowers.*

REPORT

OF THE

COMMITTEE ON FRUITS

FOR THE YEAR 1902.

By E. W. WOOD, CHAIRMAN.

The exhibitions of the past year have shown that the different varieties of fruit grown in the State have been more generally represented than usual. The apple crop, as usual on the even calendar year, has been abundant and of good quality. Pears, owing to the cold, wet weather when they were in bloom, did not set a full crop, but they have been fairly represented in the exhibitions. Peaches have been shown in much larger quantities than for several years; the experience of some large growers, especially in Connecticut, seems to show that with improved care and cultivation this most desirable fruit may be successfully grown in New England. With plums we notice an increase of the Japanese varieties though seemingly at the expense of some of the best of the old varieties. The Reine Claude de Bavay, Green Gage, and McLaughlin have not been shown for several years.

The small fruits were shown during the season in the usual quantity. Of new fruits the attention of the committee was called to specimens of peaches, plums, strawberries, and grapes, some of which seemed promising, but have not yet been sufficiently tested to warrant recommendation for general cultivation.

Commercial fruit growers have had a fairly profitable season. Cold storage and constantly increasing foreign demand for apples have prevented a glut in the home market, and prices have been well sustained. The export of apples has been confined almost entirely to the English market. The French and German as well as other foreign markets offer an opportunity for widely extending this trade.

Among growers of pears for market the tendency has been a reduction of the varieties; many varieties formerly grown at a profit have almost disappeared from our markets.

The most unfavorable feature in the outlook for the future of profitable commercial fruit growing is in the increase of insects injurious to almost every tree and plant.

The desire to secure new fruits and flowers and the increased facilities by which they may be obtained have resulted in the addition of many valuable trees, plants, fruits, and flowers; but with them we have received some of the most injurious insects with which the fruit grower has to contend, largely increasing the labor and expense necessary to preserve the trees and produce merchantable fruit.

The committee has awarded in premiums and gratuities $1,600, leaving an unexpended balance of $100.

PRIZES AND GRATUITIES AWARDED FOR FRUITS.

1902.

SPRING EXHIBITION.

MARCH 19, 20, 21, 22 AND 23.

WINTER APPLES.—Baldwin:

1st, G. V. Fletcher, $3; 2d, A. E. Hartshorn, $2; 3d, M. W. Chadbourne, $1.

Northern Spy:

1st, G. V. Fletcher, $3; 2d, G. C. Rice, $2.

Roxbury Russet:

1st, G. V. Fletcher, $3; 2d, A. E. Hartshorn, $2; 3d, H. R. Kinney, $1.

Tompkins King:
1st, G. C. Rice, $3.
Any other variety;
1st, G. V. Fletcher, Rhode Island Greening, $3; 2d, W. H. Hunt, Hunt Russet, $2; 3d, G. V. Fletcher, Mackintosh, $1.

WINTER PEARS.—Any variety:
1st, G. V. Fletcher, Anjou, $3; 2d, W. Fenno, Josephine of Malines, $2.

STRAWBERRIES.—One pint:
1st, E. S. Converse, $3.

JUNE 7. (*Changed from June 6, 7 and 8.*)

Gratuity:—

W. C. Winter, Nectarines, $1.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 19 AND 20. (*Changed from June 24 and 25.*)

Theodore Lyman Fund.

STRAWBERRIES.—Four quarts of any variety:
1st, V. Frost, the Lyman Plate, value $20; 2d, G. V. Fletcher, the Lyman Plate, value $16; 5th, G. F. Wheeler, the Lyman Plate, value, $8.

Special Prizes offered by the Society.

Two quarts of any variety best adapted for garden cultivation for home use:
1st, G. V. Fletcher, Marshall, $6; 3d, I. E. Coburn, Jessie, $4: 4th, G. F. Wheeler, Minute Man, $3.

Regular Prizes.

For the largest and best collection, not less than fifteen baskets of two quarts each, and not less than five varieties:
1st, I. E. Coburn, $20; 2d, G. F. Wheeler, $15.

Ten baskets, not less than three varieties, two quarts each:
1st, I. E. Coburn, $15; 2d, G. V. Fletcher, $12; 3d, G. F. Wheeler, $10; 4th, W. Wheeler, $8.

Five baskets of one variety, two quarts each:
1st, G. V. Fletcher, $8; 2d, I. E. Coburn, $6; 3d, G. F. Wheeler, $5; 4th, W. Wheeler, $4.

Two quarts of Belmont:
1st, I. E. Coburn, $4; 2d, G. V. Fletcher, $3.
Brandywine:
1st, E. S. Converse, $4; 3d, G. F. Wheeler, $2.
Bubach:
1st, G. V. Fletcher, $4; 2d, O. R. Robbins, $3.
Clyde:
1st, G. V. Fletcher, $4; 3d, G. F. Wheeler, $2.
Crescent:
3d, G. F. Wheeler, $2.
Haverland:
1st, I. E. Coburn, $4; 2d, G. F. Wheeler, $3; 3d, W. Wheeler, $2.
Hersey:
3d, G. F. Wheeler, $2.
Jessie:
1st, I. E. Coburn, $4.
Marshall:
1st, G. V. Fletcher, $4; 2d, V. Frost, $3; 3d, J. A. Beebe, $2.
Miner's Prolific:
1st, G. F. Wheeler, $4; 2d, W. Wheeler, $3.
Nick Ohmer:
1st, J. A. Beebe, $4; 2d, I. E. Coburn, $3; 3d, E. S. Converse, $2.
Parker Earle:
1st, I. E. Coburn, $4.
Sample:
1st, I. E. Coburn, $4; 2d, E. S. Converse, $3; 3d, G. V. Fletcher, $2.
Any other variety:
1st, S. H. Warren, Great Scott, $4; 2d, I. E. Coburn, Ridgeway, $3; 3d, G. F. Wheeler, Minute Man, $2.
One quart of any variety not previously exhibited:
1st, S. H. Warren, Great Scott, $5; 2d, S. H. Warren, No. 19, $4.

CHERRIES.—Two quarts of any variety:
1st, Miss E. W. Rumrill, Black Tartarian, $4; 2d, J. H. Fletcher, Royal Ann, $3; 3d, G. V. Fletcher, Black Tartarian, $2.

FOREIGN GRAPES.—Two bunches of any variety:
1st, Miss E. J. Clark, Black Hamburg, $6; 2d, W. C. Winter, Muscat of Alexandria, $4.

FORCED PEACHES.—Six specimens of any variety:
1st, Miss E. J. Clark, Hale's Early, $3.

Gratuity:—

P. B. Bradley, Nectarines, $3.

JULY 5. (*Changed from July 12.*)

STRAWBERRIES.—Two quarts of any variety:
1st, W. H. Monroe, Seedling, $4; 2d. G. V. Fletcher, Marshall, $3.
CHERRIES.—Two quarts of Black Eagle:
1st, G. V. Fletcher, $3; 2d, E. S. Converse, $2.
Black Tartarian:
1st, G. V. Fletcher, $3.
Coe's Transparent:
1st, C. S. Smith, $3; 2d, J. L. Bird, $2.
Downer:
1st, M. W. Chadbourne, $3; 2d, C. S. Smith, $2; 3d, E. S. Converse, $1.
Any other variety:
1st, M. W Chadbourne, White Heart, $3; 2d, C. P Travis, Elton, $2; 3d, C. S. Smith, Hyde Seedling, $1.

Gratuity:—

J. S. Chase, Triumph Gooseberries, $1.

JULY 12. (*Changed from July 19.*)

RASPBERRIES.—Two quarts of any variety:
1st, Mrs. E. J. Cutter, $3; 2d, E. S. Converse, $2.
CURRANTS.—Two quarts of any Red variety:
1st, W. J. Clemson, Versaillaise, $4; 2d, W. J. Clemson, Fay's, $3; 3d, D. Mahoney, Fay's, $2; 4th, C. Pfaff, Fay's, $1.
Two quarts of any White variety:
1st, C. Pfaff, White Grape, $3; 2d, J. S. Chase, Transparent, $2; 3d, W. J. Clemson, White Grape, $1.
GOOSEBERRIES.—Two quarts of any variety of American origin:
1st, J. S. Chase, Triumph, $4; 2d, W. J. Clemson, Columbus, $3; 3d, J. S. Chase, Columbus, $2; 4th D. Mahoney, Columbus, $1.

Gratuities:—

W. J. Clemson, Collection of Cherries, $2.
M. W. Chadbourne, Cherries, $1.
W. C. Winter, Collection, $1.
Miss E. J. Clark, Collection of Grapes, Peaches, and Nectarines, a Silver Medal.

JULY 19. (*Changed from July 26.*)

RASPBERRIES.—Two quarts of any variety:
1st, Mrs. E. J. Cutter, $3; 2d, E. L. Lewis, $2; 3d, E. S. Converse, $1.
CURRANTS.—Two quarts of any Red variety:
1st, W. J. Clemson, Versaillaise, $3; 2d, D. L. Fiske, $2.
Two quarts of any White variety:
1st, H. R. Kinney, White Grape, $2.
GOOSEBERRIES.—Two quarts of any foreign variety:
1st, W. J. Clemson, Whitesmith, $4; 2d, D. Mahoney, Whitesmith, $3; 3d, G. L. Brown, Silversmith, $2.

Gratuities:—

W. C. Winter, Plums, $1.
W. J. Clemson, Collection, $1.

JULY 26. (*Changed from August 2.*)

BLACKBERRIES.—Two quarts of any variety:
1st, M. W. Chadbourne, Dorchester, $3.
APPLES.—Tetofsky:
1st, W. C. Winter, $3; 3d, D. L. Fiske, $1.
Yellow Transparent:
1st. E. S. Converse, $3; 2d, G. L. Brown, $2; 3d, D. L. Fiske, $1.
PEARS.—Summer Doyenne:
1st, W. Fenno, $3; 2d, E. S. Converse, $2; 3d, D. L. Fiske, $1.

Gratuities:—

W. J. Clemson, Peaches, $1.
D. L. Fiske, " $1.
A. Low, " $1.

AUGUST 2. (*Changed from August 9.*)

APPLES.—Red Astrachan:
1st, M. W. Chadbourne, $3; 2d, W. H. Hunt, $2; 3d, F. W. Damon, $1.
Sweet Bough:
1st, C. B. Travis, $3; 2d, G. V. Fletcher, $2; 3d, W. Heustis & Son, $1.
Any other variety:
1st, V. Frost, Williams, $3; 2d, E. S. Converse, Yellow Transparent, $2; 3d, J. C. Stone, Williams, $1.
PEARS.—Giffard:
1st, A. T. Brown, $3; 2d, W. Fenno, $2; 3d, F. W. Damon, $1.
Any other variety:
1st, A. T. Brown, Clapp's Favorite, $3; 2d, W. Fenno, Doyenne, $2; 3d, J. L. Bird, Wilder, $1.

BLACKBERRIES.—Two quarts of any variety:
1st, M. W. Chadbourne, $3; 2d, W. J. Clemson, $2; 3d, A. Low, $1.
PEACHES.—Open culture, any variety:
1st, Mrs. E. J. Cutter, Alexander, $3; 2d, D. L. Fiske, Waterloo, $2; 3d, A. Low, Hale's Early, $1.

Gratuity:—

Mrs. J. C. Whitin, Collection of Grapes, Nectarines, and Peaches, $3.

AUGUST 9. (*Changed from August 16.*)

APPLES.—Oldenburg:
1st, Mrs. A. F. Estabrook, $3; 2d, Mrs. H. A. Clark, $2; 3d, W. Fenno, $1.
Any other variety:
1st, V. Frost, Williams, $3; 2d, M. W. Chadbourne, Williams, $2; 3d, W. H. Hunt, Astrachan, $1.
PEARS.—Clapp's Favorite:
1st, Mrs. H. A. Clark, $3; 2d, E. Torrey, $2; 3d, A. T. Brown, $1.
Any other variety:
1st, A. T. Brown, Giffard, $3; 2d, F. W. Damon, Giffard, $2; 3d, W. Fenno, Giffard, $1.
PEACHES.—Twelve specimens of outdoor culture, of any variety:
1st, A. Low, Alexander, $3; 2d, A Low, Hale's Early, $2; 3d, A. M. Clement, Greenboro, $1.
Six specimens of cold house or pot culture:
1st, Mrs. J. C. Whitin, Crimson Garland, $3; 2d, Mrs. J. C. Whitin, Royal George, $2.
BLACKBERRIES.—Two quarts of any variety:
1st, N. T. Kidder, Dorchester, $3; 2d, M. W. Chadbourne, Dorchester, $2; 3d, W. J. Clemson, Agawam, $1.
PLUMS.—Japanese, any variety:
1st, E. L. Lewis, Chabot, $3; 2d, E. L. Lewis, Abundance, $2; 3d, W. Warburton, Abundance, $1.
NECTARINES.—Orchard house culture, twelve specimens:
1st, Mrs. J. C. Whitin, $4.
FOREIGN GRAPES.—Two bunches of any variety:
1st, E. S. Converse, Black Hamburg, $5; 2d, Mrs. J. C. Whitin, Alexander, $4.

AUGUST 16. (*Changed from August 23.*)

APPLES.—Chenango:
1st, C. F. Curtis, $3; 2d, G. L. Brown, $2.
Summer Pippin:
1st, W. Fenno, $3.

Williams:
1st, V. Frost, $1; 2d, J. C. Stone, $2; 3d, A. F. Coolidge, $1.
Any other variety:
1st, W. Fenno, Sops of Wine, $3; 2d, G. V. Fletcher, Sweet Bough, $2; 3d, J. C. Stone, Gravenstein, $1.

PEARS.—Rostiezer:
1st, E. S Converse, $3; 2d, M. W. Chadbourne $2; 3d, A. T. Brown, $1.
Tyson:
1st, J. L. Bird, $3; 2d, W. Fenno, $2.
Any other variety:
1st, A. T. Brown, Clapp's Favorite, $3; 2d, E. Torrey, Clapp's Favorite, $2; 3d, W. Fenno, Clapp's Favorite, $1.

PEACHES.—Any variety:
1st, C. F. Curtis, $3; 2d, A. M. Clement, $2; 3d, G V. Fletcher, $1.

PLUMS, JAPANESE.—Abundance:
1st, E. L. Lewis, $3; 2d, D. L. Fiske, $2; 3d, J. Dunn, $1.
Burbank:
1st, D. L Fiske, $3; 2d, A. M. Clement, $2; 3d, A. Low, $1.
Any other variety:
1st, G. V. Fletcher, Bradshaw, $3; 2d, E. L. Lewis, Chabot, $2; 3d, D. L. Fiske, Red Nagate, $1.

AUGUST 23. (*Changed from August 30.*)

APPLES.—Foundling:
1st, C. M. Handley, $3.
Gravenstein:
1st, W. Fenno, $3; 2d, Mrs. H. A. Clark, $2; 3d, A. F. Coolidge, $1.
Maiden's Blush:
1st, W. C. Winter, $3; 2d, C. F. Curtis, $2; 3d, W. Fenno, $1.
Porter:
1st, G. V. Fletcher, $3; 2d, W. Heustis & Son, $2; 3d, J. C. Stone, $1.
Any other variety:
1st, J. C. Stone, Williams, $3; 2d, Mrs. H. A. Clark, Oldenburg, $2; 3d, A. E. Henderson, Bietigheimer, $1.

PEARS.—Andrews:
1st, E. S. Converse, $3; 2d, J. C. Stone, $2.
Bartlett:
1st, W. Milman, $3; 2d, V. Frost, $2; 3d, A. T. Brown, $1.
Any other variety:
1st, Mrs. H. A. Clark, Clapp's Favorite, $3; 2d, F. W. Damon, Clapp's Favorite, $2; 3d, J. B. Shurtleff, Jr., Clapp's Favorite, $1.

PEACHES.—Collection:
1st, D. L. Fiske, $3; 2d, A. Low, $2.

Single dish of any variety:
1st, F. H. Evans, Carman, $3; 2d, A. Low, Carman, $2; 3d, D. L. Fiske, St. John, $1.

PLUMS.—Bradshaw:
1st, G. V. Fletcher, $3; 2d, C. F. Curtis, $2; 3d, A. Low, $1.

Any other variety:
1st, W. P. Hutchinson, Lincoln, $3; 2d, E. L. Lewis, Washington, $2; 3d, C. C. Field, Burbank, $1.

AUGUST 30.

Gratuity:—

W. O. Sweet, Collection of Peaches, Plums, and Apples, $2.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 11, 12, 13 AND 14.

Special Prizes.

Theodore Lyman Fund.

For the heaviest and best ripened bunch of any Foreign Black Grape, not less than six pounds:
1st, Miss E. J. Clark, $15.

Society's Prizes.

APPLES.—Fall Orange or Holden:
1st, C. M. Handley, $3; 2d, F. J. Kinney, $2.

Foundling:
1st, C. M. Handley, $3; 2d, O. B. Hadwen, $2; 3d, G. C. Rice, $1.

Garden Royal:
1st, C. M. Handley, $3; 2d, C. B. Travis, $2.

Gravenstein:
1st, J. H. Locke, $3; 2d, W. Heustis & Son, $2; 3d, W. Fenno, $1.

Hubbardston:
1st, C. M. Handley, $3; 2d, L. F. Cooke, $2; 3d, A. E. Hartshorn, $1.

Mackintosh:
1st, W. O. Sweet, $3; 2d, L. Doran, $2; 3d, F. J. Kinney, $1.

Maiden's Blush:
1st, H. R. Kinney, $3; 2d, O. B. Hadwen, $2; 3d, E. E. Cole, $1.

Mother:
1st, H. R. Kinney, $3; 2d, W. Fenno, $2; 3d, W. C. Winter, $1.

Porter:
1st, J. C. Stone, $3; 2d, G. V. Fletcher, $2; 3d, M. W. Chadbourne, $1.
Pumpkin Sweet:
1st, J. Parker, $3; 2d, O. B. Hadwen, $2.
Red Bietigheimer:
1st, J. H. White, $3; 2d, G. C. Rice, $2; 3d, M. Sullivan, $1.
Sutton:
1st, F. J. Kinney, $3; 2d, O. B. Hadwen, $2; 3d, D. L. Fiske, $1.
Washington Strawberry:
1st, G. C. Rice, $3; 2d, A. E. Hartshorn, $2; 3d, W. Fenno, $1.
Wealthy:
1st, G. C. Rice, $3; 2d, W. D. Hinds, $2; 3d, C. M. Handley, $1.
Any other variety:
1st, A. F. Estabrook, Twenty Ounce, $3; 2d, G. C. Rice, Somerset, $2; 3d, W. Fenno, Alexander, $1.

CRAB APPLES.—Transcendent, twenty-four specimens:
1st, C. E. Wiggin, $2; 2d, Miss E. W. Rumrill, $1.
Any other variety:
1st, M. W. Chadbourne, $2; 2d, A. E. Hartshorn, $1.

PEARS.—Bartlett:
1st, V. Frost, $3; 2d, Mrs. H. A. Clark, $2; 3d, W. H. Derby, $1.
Belle Lucrative:
1st, A. T. Brown, $3; 2d, E. S. Converse, $2; 3d, W. Fenno, $1.
Bosc:
1st, J. B. Shurtleff, Jr., $3; 2d, A. T. Brown, $2; 3d, W. H. Derby, $1.
Boussock:
1st, E. Torrey, $3; 2d, C. F. Curtis, $2; 3d, W. Fenno, $1.
Hardy:
1st, W. Milman, $3; 2d, W. Fenno, $2.
Louise Bonne of Jersey:
1st, A. T. Brown, $3; 2d, W. Fenno, $2; 3d, F. W. Damon, $1.
Paradise of Autumn:
1st, W. Milman, $3; 2d, W. Fenno, $2; 3d, G. F. Pierce, $1.
Seckel:
1st, W. Milman, $3; 2d, A. T. Brown, $2; 3d, W. Patterson, $1.
Sheldon:
1st, G. E. Freeman, $3: 2d, F. W. Damon, $2; 3d, A. T. Brown, $1.
Souvenir du Congrès:
1st, W. Fenno, $3; 2d, A. T. Brown, $2.
Any other variety:
1st, E. Torrey, Flemish Beauty, $3; 2d, W. Fenno, Pratt, $2; 3d, W. Heustis & Son, Bonne d' Ezée, $1.

PEACHES.—Coolidge's Favorite:
1st, D. L. Fiske, $3.

Crawford's Early:
1st, D. L. Fiske, $3; 2d, G. V. Fletcher, $2; 3d, J. A. Beebe, $1.
Crosby:
1st, D. L. Fiske, $3; 3d, W. D. Hinds, $1.
Foster:
1st, D. L. Fiske, $3; 2d, J. C. Stone, $2; 3d, S. H. Warren, $1.
Oldmixon Freestone:
1st, D. L. Fiske, $3.
Stump the World:
1st, E. L. Lewis, $3; 2d, D. L. Fiske, $2.
Any other variety:
1st, W. D. Hinds, Champion, $3; 2d, C. F. Curtis, Champion, $2; 3d, F. H. Evans, Elberta, $1.
Any variety of orchard house culture:
1st, J. H. White, $4.

NECTARINES.—Outdoor culture, any variety:
1st, W. Fenno, $2.

PLUMS.—Imperial Gage:
1st, E. S. Converse, $3; 2d, F. J. Kinney, $2.
Lombard:
1st, E. L. Lewis, $3; 2d, V. Frost, $2; 3d, G. V. Fletcher, $1.
Any other variety:
1st, H. R. Kinney, Bradshaw, $3; 2d, V. Frost, Yellow Egg, $2; 3d, G. V. Fletcher, Yellow Egg, $1.

JAPANESE PLUMS.—Any variety:
1st, W. Warburton, $3; 2d, D. L. Fiske, $2; 3d, W. C. Winter, $1.

FOREIGN GRAPES.—Two bunches of Black Alicante:
1st, Miss E. J. Clark, $5; 2d, Mrs. J. C. Whitin, $4.
Lady Downs:
1st, Miss E. J. Clark, $5.
Muscat of Alexandria:
1st, Miss E. J. Clark, $5; 2d, Mrs. J. C. Whitin, $4.
Any other variety:
1st, Miss E. J. Clark, Gros Guillaume, $5; 2d, Miss E. J. Clark, Gros Maroc, $4; 3d, Miss E. J. Clark, Mrs. Pearson, $3.

NATIVE GRAPES.—Six bunches of Campbell's Early:
1st, F. J. Kinney, $3; 2d, L. Darling, $2.
Massasoit:
1st, J. S. Chase, $3; 2d, F. W. Damon, $2.
Moore's Early;
1st, G. W. Jameson, $3; 2d, E. L. Lewis, $2; 3d, F W. Damon, $1.
Any other variety:
1st, J. S. Chase, Delaware, $3; 2d, H. R. Kinney, Worden, $2; 3d, F. W. Damon, Lindley, $1.
Six bunches from girdled vines, of any variety:
1st, H. R. Kinney, Worden, $3; 2d, H. R. Kinney, Green Mountain, $2

Gratuities:—

H. Eaton, Collection of Apples from dwarf trees set out in 1889, $2.

M. W. Chadbourne, Collection, $2.

OCTOBER EXHIBITION OF FRUITS AND VEGETABLES.

OCTOBER 3 AND 4.

Special Prizes.

Samuel Appleton Fund.

APPLES.—Baldwin:

1st, J. C. Stone, $4; 2d, M. Sullivan, $3; 3d, Goodell Farm, $2; 4th, M. W. Chadbourne, $1.

Hubbardston:

1st, A. Frost, $4; 2d, C. M. Handley, $3; 3d, F. J. Kinney, $2; 4th, L. F. Cooke, $1.

PEARS.—Bosc:

1st, C. F. Curtis, $4; 2d, G. V. Fletcher, $3; 3d, A. T. Brown, $2; 4th, J. L. Bird, $1.

Sheldon:

1st, E. Torrey, $4; 2d, J. L. Bird, $3; 3d, G. V. Fletcher, $2; 4th, A. T. Brown, $1.

Benjamin V. French Fund.

APPLES.—Gravenstein:

1st, C. F. Boyden, $4; 2d, C. E. Gates, $3; 3d, F. J. Kinney, $2; 4th, E. M. Bruce, $1.

Rhode Island Greening:

1st, A. F. Coolidge, $4; 2d, W. P. Hutchinson, $3; 3d, G. V. Fletcher, $2; 4th, A. Frost, $1.

Marshall P. Wilder Fund.

PEARS.—Anjou:

1st, W. Milman, $4; 2d, F. W. Damon, $3; 3d, A. T. Brown, $2; 4th, A. F. Coolidge, $1.

Bartlett:

1st, G. V. Fletcher, $4; 2d, V. Frost, $3; 3d, A. T. Brown, $2.

GRAPES.—Concord, twelve bunches:

1st, H. R. Kinney, $4; 2d, E. A. Adams, $3; 3d, J. S. Chase, $2; 4th, G. V. Fletcher, $1.

Worden:
1st, H. R. Kinney, $4; 2d, J. S. Chase, $3.

Theodore Lyman Fund.

APPLES.—Dutch Codlin:
1st, Mrs. S. A. Nye, $2; 2d, W. Fenno, $1.
Fall Orange or Holden:
1st, C. M. Handley, $3.
Fletcher Russet:
1st, E. R. Teele, $3; 2d, C. M. Handley, $2; 3d, G. V. Fletcher, $1.
Foundling:
1st, C. M. Handley, $4; 2d, E. M. Bruce, $3; 3d, O. B. Hadwen, $2.
Gloria Mundi:
1st, C. D. Eames, $3; 2d, E. M. Bruce, $2.
Golden Russet:
1st, H. R. Kinney, $2.
Lady's Sweet:
2d, W. Fenno, $1.
Maiden's Blush:
1st, H. R. Kinney, $3; 2d, O. B. Hadwen, $2; 3d, W. Fenno, $1.
Mother:
1st, H. R. Kinney, $3; 2d, W. Fenno, $2; 3d, G. C. Rice, $1.
Porter:
1st, A. Frost, $3; 2d, L. F. Cooke, $2; 3d, M. Sullivan, $1.
Pound Sweet:
1st, G. C. Rice, $3; 2d, G. V. Fletcher, $2; 3d, E. M. Bruce, $1.
Sutton:
1st, F. J. Kinney, $3; 2d, D. L. Fiske, $2; 3d, O. B. Hadwen, $1.
Palmer:
1st, E. M. Bruce, $3; 2d, O. B. Hadwen, $2; 3d, G. C. Rice, $1.
Wealthy:
1st, M. Sullivan, $3; 2d, C. M. Handley, $2; 3d, G. C. Rice, $1.
Any other variety:
1st, J. B. Shurtleff, Jr., King, $3; 2d, J. Parker, Belleflower, $2; 3d, M. Martin, King, $1.

Regular Prizes.

PEARS.—Angouleme:
1st, W. H. Derby, $4; 2d, J. L. Bird, $3; 3d, S. Coolidge, $2; 4th, A. T. Brown, $1.
Clairgeau:
1st, W. H. Derby, $3; 2d, C. F. Curtis, $2; 3d, F. W. Damon, $1.
Comice:
1st, A. T. Brown, $3; 2d, J. L. Bird, $2; 3d, W. Fenno, $1.

Dana's Hovey:
1st, A. T. Brown, $4; 2d, W. Milman, $3; 3d, W. Heustis & Son, $2; 4th, F. W. Damon, $1.

Diel:
1st, A. T. Brown, $3; 2d, F. W. Damon, $2; 3d, A. K. Gould, $1.

Fulton:
1st, E. S. Converse, $3; 2d, C. F. Curtis, $2; 3d, W. Fenno, $1.

Hardy:
1st, Mrs. E. M. Gill, $3; 2d, W. Milman, $2; 3d, A. K. Gould, $1.

Howell:
1st, S. Coolidge, $3; 2d, W. Fenno, $2.

Josephine of Malines:
1st, W. Fenno, $3; 2d, J. L. Bird, $2.

Lawrence:
1st, A. T. Brown, $3; 2d, M. W. Chadbourne, $2; 3d, W. Fenno, $1.

Louise Bonne of Jersey:
1st, W. H. Derby, $3; 2d, M. Sullivan, $2; 3d, W. Fenno, $1.

Marie Louise:
1st, E. Torrey, $3; 2d, A. T. Brown, $2; 3d, W. Fenno, $1.

Merriam:
1st, W. Heustis & Son, $3; 2d, F. W. Damon, $2; 3d, W. Fenno, $1.

Onondaga:
1st, J. L. Bird, $3; 2d, C. B. Travis, $2; 3d, W. Fenno, $1.

Seckel:
1st, A. T. Brown, $4; 2d, W. Milman, $3; 3d, M. W. Chadbourne, $2; 4th, D. Perkins, $1.

Sheldon:
1st, E. Torrey, $4; 2d, D. Perkins, $3; 3d, F. W. Damon, $2; 4th, G. F. Wheeler, $1.

Superfin:
1st, W. Fenno, $3; 2d, F. W. Damon, $2.

Urbaniste:
1st, A. T. Brown, $3; 2d, E. S. Converse, $2; 3d, J. L. Bird, $1.

Any other variety:
1st, W. Fenno, Pratt, $3; 2d, J. L. Bird, Kingsessing, $2; 3d, W. Fenno, St. Michael Archangel, $1.

QUINCES.—Champion;
1st, G. V. Fletcher, $3; 2d, J. S. Chase, $2.

Orange:
1st, G. V. Fletcher, $3; 2d, W. Fenno, $2; 3d, J. C. Stone, $1.

Pear:
1st, G. L. Brown, $3.

Rea:
1st, G. V. Fletcher, $3.

Any other variety:
1st, J. S. Chase, $3.

PEACHES.—Crawford's Late:
1st, D. L. Fiske, $3; 2d, C. P. Trowbridge, $2; 3d, S. H. Warren, $1.
Any other variety:
1st, C. F. Fenno, $3; 2d, E. P. Ripley, $2; 3d, G. V. Fletcher, $1.
PLUMS.—Coe's Golden Drop:
1st, C. Scully, $2.
Yellow Egg:
1st, G. V. Fletcher, $2.
Any other variety:
1st, H. R. Kinney, Shipper's Pride, $2; 2d, D. L. Fiske, Satsuma, $1.
NATIVE GRAPES.—Six bunches of Brighton:
1st, C. W. Libby, $3; 2d, E. A. Adams, $2; 3d, J. S. Chase, $1.
Delaware:
1st, J. S. Chase, $4; 2d, W. T. Hutchinson, $3; 3d, W. Fenno, $2; 4th, H. R. Kinney, $1.
Eumelan:
1st, J. S. Chase, $3.
Herbert:
1st, G. W. Jameson, $3; 2d, J. S. Chase, $2; 3d, C. W. Libby, $1.
Iona:
2d, J. S. Chase, $2.
Lindley:
1st, C. W. Libby, $3; 2d, J. S. Chase, $2.
Niagara:
1st, J. S Chase, $3; 2d, E. S. Converse, $2; 3d, E. L. Lewis, $1.
Pocklington:
1st, H. R. Kinney, $4; 2d, J. S. Chase, $3; 3d, F. H. Jackson, $2; 4th, C. W. Libby, $1.
Prentiss:
1st, J. S. Chase, $3.
Wilder:
1st, E. A. Adams, $3.
Any other variety:
1st, J. S. Chase, $3; 2d, G. W. Jameson, $2; 3d, C. W. Libby, $1.
Any variety from girdled vines:
1st, H. R. Kinney, Worden, $3; 2d, H. R. Kinney, Salem, $2; 3d, H. R. Kinney, Concord, $1.
CRANBERRIES.—Half-peck:
1st, C. P. Trowbridge, $3; 2d, L. J. Fosdick, $2; 3d, L. J. Fosdick, $1

Gratuities:—

W. Fenno, Collection of Pears and Apples, $10.
Miss E. J. Clark, Collection of Pears and Apples, $2.
M. W. Chadbourne, Collection, $2.
Mrs. F. L. Ames, Muscat of Alexandria Grapes, a Silver Medal.

CHRYSANTHEMUM SHOW.

NOVEMBER 6, 7, 8 AND 9.

Benjamin V. French Fund.

APPLES.—Baldwin:
1st, M. W. Chadbourne, $3; 2d, Mrs. M. B. Whiting, $2; 3d, G. V. Fletcher, $1.
Rhode Island Greening:
1st, Miss A. Whiting, $3; 2d, A. Frost, $2; 3d, G. V. Fletcher, $1.

Society's Prizes.

APPLES.—Danvers Sweet:
1st, J. K. Manning, $3; 2d, W. Fenno, $2; 3d, B. P. Ware, $1.
Fameuse:
1st, G. V. Fletcher, $3; 2d, M. W. Chadbourne, $2; 3d, G. C. Rice, $1.
Fletcher Russet:
1st, E. R. Teele, $3; 2d, G. V. Fletcher, $2; 3d, W. H. Teele, $1.
Hubbardston:
1st, A. Frost, $3; 2d, F. J. Kinney, $2; 3d, A. T. Leavitt, $1.
Hunt Russet:
1st, W. G. Kendall, $3; 2d, C. F. Boyden, $2.
Jacob's Sweet:
1st, M. Martin, $3; 2d, C. F. Curtis, $2.
Lady's Sweet:
1st, O. B. Wyman, $3; 2d, D. L. Fiske, $2; 3d, F. J. Kinney, $1.
Mackintosh:
1st, F. J. Kinney, $3; 2d, E. M. Bruce, $2; 3d, G. C. Rice, $1.
Northern Spy:
1st, G. V. Fletcher, $3; 2d, O. B. Wyman, $2; 3d, A. E. Hartshorn, $1.
Roxbury Russet:
1st, H. R. Kinney, $3; 2d, W. H. Boyden, $2; 3d, A. E. Hartshorn, $1.
Tolman's Sweet:
1st, G. V. Fletcher, $3; 2d, Mrs. A. E. Underwood, $2; 3d, A. Frost, $1.
Tompkins King:
1st, C. F. Boyden, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, G. C. Rice, $1.
Any other variety:
1st, Mrs. A. E. Underwood, Belleflower, $3; 2d, E. E. Doran, Belleflower, $2; 3d, J. Parker, Belleflower, $1.
PEARS.—Angouleme:
1st, E. Torrey, $4; 2d, F. W. Damon, $3; 3d, J. L. Bird, $2; 4th, W. Fenno, 1$.

Anjou:
1st, W. Milman, $4; 2d, F. W. Damon, $3; 3d, E. S. Converse, $2; 4th, W. Fenno, $1.

Bosc:
1st, A. T. Brown, $4; 2d, G. V. Fletcher, $3; 3d, J. L. Bird, $2; 4th, J. B. Shurtleff, Jr., $1.

Clairgeau:
1st, C. F. Curtis, $3; 2d, W. Fenno, $2; 3d, B. P. Ware, $1

Comice:
1st, A. T. Brown, $4; 2d, J. L. Bird, $3; 3d, W. Fenno, $2; 4th, A. K. Gould, $1.

Dana's Hovey:
1st, A. T. Brown, $4; 2d, W. G. Kendall, $3; 3d, E. W. Howe, $2; 4th, W. Milman, $1.

Diel:
1st, A. K. Gould, $3; 2d, A. T. Brown, $2.

Glout Morceau:
1st, Mrs. A. A. Johnson, $3; 2d, W. Fenno, $2; 3d, E. A. Hall, $1.

Josephine of Malines:
1st, J. L. Bird, $3; 2d, W. Fenno, $2; 3d, J. B. Shurtleff, Jr., $1.

Langelier:
1st, A. T. Brown, $3; 2d, A. K. Gould, $2; 3d, W. Fenno, $1.

Lawrence:
1st, W. Fenno, $3; 2d, M. Sullivan, $2; 3d, J. L. Bird, $1.

Vicar:
1st, J. L. Bird, $3; 2d, A. T Brown, $2; 3d, E. S. Converse, $1.

Winter Nelis:
1st, A. T. Brown, $3; 2d, E. S. Converse, $2; 3d, W. Fenno, $1.

Any other variety:
1st, E. Torrey, Beurré d'Arenberg, $3; 2d, W. Milman, Mt. Vernon, $2; 3d, A. T. Brown, Seckel, $1.

QUINCES.—Any variety:
1st, G. V. Fletcher, Rea, $3; 2d, G. V. Fletcher, Orange, $2; 3d, W. Fenno, Orange, $1.

Gratuity:—

M. W. Chadbourne, Collection, $2.

E. W. WOOD,
CHARLES F. CURTIS,
WARREN FENNO,
J. WILLARD HILL,
GEORGE F. PIERCE,
JOHN L. BIRD,
FREDERICK W. DAMON.

Committee on Fruits.

REPORT

OF THE

COMMITTEE ON VEGETABLES

FOR THE YEAR 1902.

By Warren Howard Heustis, Chairman.

The past season has been unusually favorable for plant growth, and we have to report displays of vegetables far above the average.

At the winter exhibitions there were very full entries in all classes. The tomatoes grown by C. A. Learned were especially noticeable, both for size and quality, and were considered the best shown here for years. The vines on which they were grown were particularly thrifty and the fruit set very low down.

The interest in exhibiting produce is increasing, as the number of exhibitors this year was sixty, against forty competitors last year.

There has been hardly a good specimen of green-flesh melon shown this year, which would lead one to think that this class of fruit must be grown under glass like a cucumber and even then the life of the vine is very short.

There has been a fair showing of salmon-flesh melons and from this we would infer that this melon is not as subject to fungus or insect pests as the green-flesh.

At the September and November shows a silver and a bronze medal were offered for eight roots of celery shown without side branches, which resulted in the exhibition of a remarkably fine lot.

There was enough celery at the November show to extend completely around the small hall. At the Annual Exhibition of Fruits and Vegetables in October, Mr. Simmons, of Rockland, Mass., showed an excellent looking potato which he has called "Simmons' Model" and your committee thought it deserving of a First Class Certificate of Merit.

We hope it will continue to be in its future development as satisfactory as it appears to be at present. We are sorry to know that our appropriation is to be cut down twenty-five per cent as we found it was originally small enough.

We have expended for prizes and gratuities $1156.00, leaving an unexpended balance of $44.00, out of which is to be paid the cost of two silver medals, two bronze medals, and one First Class Certificate of Merit.

PRIZES AND GRATUITIES AWARDED FOR VEGETABLES.

1902.

JANUARY 4.

RADISHES.—Four bunches of any variety:
1st, A. E. Hartshorn, $3.

CUCUMBERS.—Pair of any variety:
1st, W. C. Winter, $3; 2d, Mrs. J. L. Gardner, $2; 3d, E. F. Scolley, $1.

CAULIFLOWERS.—Four specimens:
1st, C. M. Handley, $3.

CELERY.—Four roots of any variety:
1st, A. E. Hartshorn, Boston Market, $3; 2d, W. Heustis & Son, Boston Market, $2; 3d, W. Heustis & Son, Giant Pascal, $1.

LETTUCE.—Four heads of Tennisball:
2d, A. E. Hartshorn, $2; 3d, W. J. Clemson, $1.

PARSLEY.—Two quarts:
1st, W. J. Clemson, Chappell's, $2; 2d, W. J. Clemson, Champion, $1.

MUSHROOMS.—Twenty-four specimens:
1st, W. C. Winter, $3; 2d, H. R. Kinney, $2.

TOMATOES.—Twelve specimens:
1st, C. A. Learned, $3; 2d, W. C. Winter, $2; 3d, W. C. Winter, $1.

Gratuities:—

E. L. Lewis, Collection, $3.
A. E. Hartshorn, " $2.
W. Heustis & Son, " $1.
A. Low, " $1.

FEBRUARY 8.

RADISHES.—Four bunches of any variety:
1st, A. E. Hartshorn, $3.
SALSIFY.—Twelve specimens:
1st, V. Frost, $3.
CUCUMBERS.—Pair of any variety:
1st, W. C. Winter, $3.
CELERY.—Four roots of any variety:
1st, W. Heustis & Son, Pascal, $3; 2d, A. E. Hartshorn, Paris Golden, $2; 3d, W. Heustis & Son, Boston Market, $1.
DANDELIONS.—Peck:
1st, A. E. Hartshorn, $3.
LETTUCE.—Four heads of Tennisball:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2.
RHUBARB.—Twelve stalks:
1st, F. Wheeler, $3; 2d, C. F. Smith, $2.
TOMATOES.—Twelve specimens;
1st, C. A. Learned, $3; 2d, W. C. Winter, $2; 3d, W. C. Winter, $1.

Gratuity:—

A. E. Hartshorn, Collection, $2.

MARCH 8.

Gratuity:—

G. D. Moore, Lettuce, $1.

SPRING EXHIBITION.

MARCH 19, 20, 21, 22 AND 23.

William J. Walker Fund.

RADISHES.—Four bunches of Turnip Rooted:
1st, W. W. Rawson, $2; 2d, A. E. Hartshorn, $1.

CUCUMBERS.—Pair of White Spine:
1st, W. W. Rawson, $3.
DANDELIONS.—Peck:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Four heads of Tennisball:
1st, Wyman Bros., $3; 2d, W. W. Rawson, $2; 3d, J. C. Stone, $1.
WATER CRESS.—Two quarts:
1st, A. E. Hartshorn, $2; 2d, B. P. Ware, $1.
PARSLEY.—Two quarts:
1st, W. J. Clemson, $2; 2d, J. C. Stone, $1.
MUSHROOMS.—Twenty-four specimens:
1st, Wyman Bros., $3; 2d, H. R. Kinney, $2; 3d, H. R. Kinney, $1.
RHUBARB.—Twelve stalks:
1st, F. Wheeler, $3; 2d, Wyman Bros., $2; 3d, W. H. Derby, $1.
TOMATOES.—Twelve specimens:
1st, W. C. Winter, $3; 2d, W. C. Winter, $2.

Gratuities:—

E. S. Converse, Beans, $1.
M. W. Chadbourne, Artichokes, $1.
A. E. Hartshorn, Collection, $3.
W. Heustis & Son, " $2.
G. D. Moore, " $1.
W. W. Rawson, " $1.
H. E. Rich, " $1.

APRIL 5.

BEETS.—Twelve specimens of Turnip Rooted
1st, W. Warburton, $3; 2d, A. Nixon, $2; 3d, A. Low, $1.
PARSNIPS.—Twelve specimens:
1st, A. Nixon, $3; 2d, W. Warburton, $2; 3d, J. Nuttall, $1.
RADISHES.—Four bunches:
1st, A. Nixon, $2; 2d, A. E. Hartshorn, $1.
LETTUCE.—Four heads:
1st, A. E. Hartshorn, $3; 2d, G. D. Moore, $2; 3d, H. R. Kinney, $1.
CUCUMBERS.—Pair of White Spine:
1st, W. C. Winter, $3.

Gratuities:—

A. E. Hartshorn, Collection, $2.
A. Low, " $1.

MAY 10.

William J. Walker Fund.

ASPARAGUS.—Four bunches of twelve stalks each:
1st, W. H. Hunt, $3; 2d, W. J. Clemson, $2; 3d, A. E. Hartshorn, $1.
CUCUMBERS.—Pair of White Spine:
1st, E. M. Bruce, $3; 2d, W. C. Winter $2.
Any other variety:
1st, E. M. Bruce, $3; 2d, E. M. Bruce, $2; 3d, E. M. Bruce, $1.
SPINACH.—Peck.
1st, A. Low, $3; 2d, G. D. Moore, $2; 3d, A E. Hartshorn, $1.
DANDELIONS.—Peck.
1st, J. C. Stone, $3; 2d, W. Heustis & Son, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Four heads:
1st, W. Warburton, $3; 2d, J. C. Stone, $2.
RHUBARB —Twelve stalks:
1st, W. Heustis & Son, $3; 2d, W. J. Clemson, $2; 3d, A. Low, $1.
TOMATOES.—Twelve specimens:
1st, W. J. Clemson, $3; 2d, W. C. Winter, $2; 3d, A. Low, $1.

Gratuities:—

A. E. Hartshorn, Collection, $2.
W. J. Clemson, " $1.
W. Heustis & Son, " $1.
A. Low, " $1.
G. D. Moore, " $1.
J. C. Stone, " $1.
W. C. Winter, " $1.

RHODODENDRON EXHIBITION.

JUNE 7. (*Changed from June 6, 7 and 8.*)

Theodore Lyman Fund.

BEETS.—Twelve specimens:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2.
CARROTS.—Twelve specimens:
1st, W. J. Clemson, Short Horn, $3; 2d, W. J. Clemson, Early Forcing, $2; 3d, A. E. Hartshorn, Early Forcing, $1.
RADISHES.—Four bunches of Turnip Rooted:
1st, W J. Clemson, $2; 2d, A. E. Hartshorn, $1.

ASPARAGUS.—Four bunches:
1st, W H. Hunt, $3.
CUCUMBERS.—Pair:
1st, G. D. Moore, $3; 2d, V. Frost, $2; 3d, J. C. Stone, $1.
LETTUCE.—Four heads of any variety:
1st, W. Heustis & Son, Big Boston, $3; 2d, W. Heustis & Son, Tennisball, $2; 3d, V. Frost, Big Boston, $1.
RHUBARB.—Twelve stalks:
1st, W. J. Clemson, $3; 2d, W. Heustis & Son, $2; 3d, G. D. Moore, $1.
MUSHROOMS.—Twenty-four specimens:
1st, W. C. Winter, $3; 2d, A. J. Edwards, $2.

Gratuities:—

W. J. Clemson, Collection, $3.
A. E. Hartshorn, " $2.
G. D. Moore, " $2.
W. Warburton, " $2.
A. Low, " $1.

JUNE 14.

Gratuities:—

W. H. Hunt, Asparagus, $1.
A. E. Hartshorn, Collection, $2.
W. Heustis & Son, " $1.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 19 AND 20. (*Changed from June 24 and 25.*)

BEETS.—Twelve specimens of Summer Turnip Rooted:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.
ONIONS.—Twelve specimens:
1st, A. E. Hartshorn, $3; 2d, T. Valentine, $2; 3d, W. J. Clemson, $1.
CUCUMBERS.—Pair of White Spine:
1st, V. Frost, $3; 2d, G. D. Moore, $2; 3d, A. E. Hartshorn, $1.
Any other variety:
1st, N. T. Kidder, $3; 2d, A. E. Hartshorn, $2.
CABBAGES.—Three of any variety, trimmed:
1st, G. D. Moore, Early Spring, $3; 2d, G. D. Moore, Wakefield, $2.

LETTUCE.—Four heads of Tennisball:
1st, W. Heustis & Son, $3; 2d, T. Valentine, $2; 3d, A. E. Hartshorn, $1.
Any other variety:
1st, E. L. Lewis, Defiance, $3; 2d, E. L. Lewis, Deacon, $2; 3d, E. L. Lewis, Immensity, $1.
PEAS.—Half-peck of any variety:
1st, W. J. Clemson, Gradus, $3; 2d, A. E. Hartshorn, Gradus, $2; 3d, P. B. Bradley, Gradus, $1.
Gratuities:—
W. H. Hunt, Asparagus, $1.
N. T. Kidder, Cauliflowers, $2.
E. S. Converse, Tomatoes, $1.
G. D. Moore, Collection, $3.
A. E. Hartshorn, " $2
W. Heustis & Son, " $2.
E. L. Lewis, " $2.

JULY 5. (*Changed from July 12.*)

POTATOES.—Twelve specimens:
1st, E. L. Lewis, Hebron, $3; 2d, E. L. Lewis, Early Rose, $2; 3d, W. J. Clemson, Early Rose, $1.
ONIONS.—Twelve specimens:
1st, A. E. Hartshorn, $2; 2d, E. L. Lewis, $1.
SQUASHES.—Four specimens of Long Warted:
1st, J. C. Stone, $3.
Scalloped:
1st, J. C. Stone, $3.
CABBAGES.—Three of any variety, trimmed:
1st, G. D. Moore, Succession, $3; 2d, W. Heustis & Son, Early Spring, $2; 3d, G. D. Moore, Early, Spring, $1.
BEANS.—Half-peck of Wax:
1st, J. C. Stone, $3; 2d, G. D. Moore, $2; 3d, E. L. Lewis, $1.
Any other variety:
1st, G. D. Moore, $3.
PEAS.—Half-peck of American Wonder:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2.
Half-peck of Advancer:
1st, A. E. Hartshorn, $3; 2d, Mrs. E. M. Gill, $2.
Half-peck of any other variety.
1st, A. E. Hartshorn, $3; 2d, A. Low, $2; 3d, F. Tetlow, $1.

Gratuities:—

W. Heustis & Son, Collection, $3.
E. L. Lewis, " $3.
W. J. Clemson, " $2.
G. D. Moore, " $2.
A. Low, " $1.

JULY 12. (*Changed from July 19.*)

Levi Whitcomb Fund.

POTATOES.—Twelve specimens:
1st, E. L. Lewis, Early Rose, $3; 2d, W. J. Clemson, Early Rose, $2; 3d, F. J. Kinney, Hebron, $1.
CABBAGES.—Three Drumhead, trimmed:
1st, G. D. Moore, $3; 2d, W. Heustis & Son, $2; 3d, G. D. Moore, $1.
LETTUCE.—Four heads:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.
BEANS.—Half-peck of Wax:
1st, E. L. Lewis, $3; 2d, G. D. Moore, $2; 3d, A. E. Hartshorn, $1.
Half-peck of any green variety:
1st, J. C. Stone, $3; 2d, G. D. Moore, $2; 3d, A. E. Hartshorn, $1.
SQUASHES.—Four specimens of Long Warted:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, H. Leavitt, $1.
Four specimens of White Scalloped:
1st, J. C. Stone, $3; 2d, W. Heustis & Son, $2.

Gratuities:—

E. L. Lewis, Collection, $3.
W. J. Clemson, " $2.
W. Warburton, " $2.
Mrs. E. M. Gill, " $1.
W. Heustis & Son, " $1.
H. Leavitt, " $1.
G. D. Moore, " $1.

JULY 19. (*Changed from July 26.*)

POTATOES.—Twelve specimens:
1st, E. L. Lewis, Hebron, $3; 2d, E. L. Lewis, Early Rose, $2; 3d, W. J. Clemson, Early Rose, $1.
LETTUCE.—Four heads of Tennisball:
1st, W. Heustis & Son, $2.
Any other variety:
1st, H. R. Kinney, Wonderful, $3; 2d, E. L. Lewis, Deacon, $2.

PEAS.—Half-peck of Stratagem:
1st, A. Nixon, $3.
Any other variety:
1st, H. R. Kinney, Champion, $3; 2d, J. Thorpe, Carter's Daisy, $2; 3d, A. E. Hartshorn, Telephone, $1.
SWEET CORN.—Twelve ears:
1st, G. D. Moore, Farquhar's Early, $3; 2d, J. C. Stone, Cory, $2.
TOMATOES.—Open culture, twelve specimens:
1st, A. E. Hartshorn, Acme, $3; 2d, G. D. Moore, Earliana, $2; 3d, J. C. Stone, Atlantic, $1.

Gratuities:—

W. J. Clemson, Collection, $2.
W. Heustis & Son, " $2.
E. L. Lewis, " $2.
A. Nixon, " $2.
J. Thorpe, " $2.
W. Warburton, " $2.
A. E. Hartshorn, " $1.

JULY 26. (*Changed from August 2.*)

POTATOES.—Twelve specimens:
1st. E. L. Lewis, Early Rose, $3; 2d, W. J. Clemson, Early Rose, $2; 3d, J. W. Burns, Early Northern, $1.
SQUASHES.—Three specimens of Marrow:
1st, J. C. Stone, $3; 2d, T. Valentine, $2.
SWEET CORN.—Twelve ears of Crosby:
1st, G. D. Moore, $3; 2d, J. C. Stone, $2.
Any other variety:
1st, G. D. Moore, Potter's Excelsior, $3; 2d, G. D. Moore, Cory, $2; 3d, J. C. Stone, Cory, $1.
TOMATOES.—Twelve specimens:
1st, W. C. Winter, May's Favorite, $3; 2d, W. Warburton, Dwarf Champion, $2; 3d, A. E. Hartshorn, Acme, $1.
NATIVE MUSHROOMS.—Named collection of not less than five edible varieties:
1st, Mrs. Grinnell, $4; 2d, Mrs. S. C. Pierce, $3.

Gratuities:—

W. J. Clemson, Collection, $1.
E. L. Lewis, " $1.
W Warburton, " $1.

AUGUST 2. (*Changed from August 9.*)

BEETS.—Twelve specimens:
1st, G. D. Moore, $3; 2d, W. J. Clemson, $2; 3d, E. L. Lewis, $1.
TURNIPS.—Twelve specimens:
1st, E. L. Lewis, $2.
CABBAGES.—Three specimens:
1st, W. Heustis & Son, Succession, $3; 2d, W. Heustis & Son, No. 2, $2; 3d, A. E. Hartshorn, $1.
BEANS.—Two quarts of Goddard, shelled:
1st, J. Thorpe, $3.
Two quarts of Horticultural, shelled:
1st, A. E. Hartshorn, $3; 2d, J. Thorpe, $2.
TOMATOES.—Twelve specimens:
1st, V. Frost, Belmont, $3; 2d, J. Thorpe, Matchless, $2; 3d, J. Thorpe, Dwarf Aristocrat, $1.
SQUASHES.—Three specimens of Marrow:
1st, J. C. Stone, $3.

Gratuity:—

W. J. Clemson, Collection, $1.

AUGUST 9. (*Changed from August 16.*)

CARROTS.—Twelve specimens:
1st, W. J. Clemson, $3; 2d, E. L. Lewis, $2; 3d, A. Nixon, $1.
SALMON FLESH MELONS.—Four specimens:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2.
SWEET CORN.—Twelve ears:
1st, W. J. Clemson, $3; 2d, J. C. Stone, $2; 3d, E. L. Lewis, $1.
TOMATOES.—Twelve specimens:
1st, V. Frost, $3; 2d, A. F. Coolidge, $2; 3d, J. C. Stone, $1.
EGG PLANT.—Four specimens of Round Purple:
1st, A. F. Coolidge, $3.

Gratuity:—

E. L. Lewis, Collection, $1.

AUGUST 16. (*Changed from August 23.*)

POTATOES.—Twelve specimens:
1st, E. L. Lewis, Clark's No. 1, $3; 2d, E. L. Lewis, Early Rose, $2; 3d, J. W. Burns, $1.

ONIONS.—Twelve specimens:
1st, A. F. Coolidge, $3; 2d, E. L. Lewis, $2; 3d, T. Valentine, $1.
SALMON FLESH MELONS.—Any variety, four specimens:
2d, G. D. Moore, $2.
CELERY.—Four roots of any variety:
1st, A. F. Coolidge, $3; 2d, F. Tetlow, $2; 3d, J. Thorpe, $1.
BEANS.—Two quarts of Goddard, shelled:
1st, A. E. Hartshorn, $3; 2d, J. Thorpe, $2; 3d, J. W. Burns, $1.
SWEET CORN.—Twelve ears of any variety other than Potter's Excelsior:
1st, J. C. Stone, $3; 2d, E. L. Lewis, $2; 3d, J. Thorpe, $1.
TOMATOES.—Twelve specimens:
1st, A. F. Coolidge, Stone, $3; 2d, A. F. Coolidge, Belmont, $2; 3d, W. Heustis & Son, Belmont, $1.
PEPPERS.—Twelve specimens of Squash:
1st, A. Low, $3; 2d, A. Low, $2; 3d, W. Warburton, $1.
Any other variety:
1st, E. L. Lewis, $3; 2d, W. Warburton, $2; 3d, A. E. Hartshorn, $1.

Gratuities:—

W. J. Clemson, Collection, $2.
W. Heustis & Son, " $1.
A. Low, " $1.
T. Valentine, " $1.

AUGUST 23. (*Changed from August 30.*)

BEETS.—Twelve specimens:
1st, W. Warburton, $3; 2d, E. L. Lewis, $2; 3d, E. L. Lewis, $1.
GREEN FLESH MELONS.—Four specimens:
1st, A. E. Hartshorn, $3.
SALMON FLESH MELONS.—Four specimens:
1st, V. Frost, $3; 2d, A. E. Hartshorn, $2.
WATERMELONS.—Pair:
3d, J. Thorpe, $1.
CAULIFLOWERS.—Four specimens:
1st, DeSouza Bros., $3; 2d, C. M. Handley, $2; 3d, W. H. Teele, $1.
CELERY.—Four roots:
1st, F. Tetlow, $3; 2d, A. F. Coolidge, $2; 3d, A. E. Hartshorn, $1.
MARTYNIAS.—Twelve specimens:
1st, E. L. Lewis, $2; 2d, E. S. Converse, $1.
NATIVE MUSHROOMS.—Named collection of not less than five edible varieties:
1st, Mrs. Grinnell, $3; 2d, Boston Mycological Club, $2.

Gratuities:—

W. Heustis & Son, Collection, $1.
A. Low, " $1.
J. B. Shurtleff, Jr., " $1.
W. Warburton, " $1.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 11, 12, 13 AND 14.

Special Prizes.

CELERY.—Eight roots without side branches:
1st, A. Nixon, A Silver Medal; 2d, V. Frost, A Bronze Medal.

Regular Prizes.

BEETS.—Twelve specimens:
1st, G. D. Moore, $3; 2d, W. Warburton, $2; 3d, W. Warburton, $1.
PARSNIPS.—Twelve specimens:
1st, W. Heustis & Son, $3; 2d, G. D. Moore, $2; 3d, E. L. Lewis, $1.
SALSIFY.—Twelve specimens:
1st, G. D. Moore, $3; 2d, V. Frost, $2; 3d, W. Heustis & Son, $1.
TURNIPS.—Twelve specimens of Flat:
1st, G. F. Wheeler, $3; 2d, W. Wheeler, $2; 3d, E. L. Lewis, $1.
SALMON FLESH MELONS.—Four specimens:
1st, J. A. Beebe, $3; 2d, J. C. Stone, $2.
WATERMELONS.—Pair:
1st, J. Thorpe, $3; 2d, E. L. Lewis, $2; 3d, J. Thorpe, $1.
CABBAGES.—Three specimens, any variety:
1st, A. Low, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.
CAULIFLOWERS.—Four specimens:
1st, C. M. Handley, $3; 2d, W. H. Teele, $2; 3d, E. R. Teele, $1.
LETTUCE.—Four heads of any variety:
1st, E. L. Lewis, Deacon, $3; 2d, E. L. Lewis, Defiance, $2; 3d, E. L. Lewis, Immensity, $1.
CELERY.—Four roots of any variety:
1st, A. Nixon, $3; 2d, A. F. Coolidge, $2; 3d, G. D. Moore, $1.
PARSLEY.—Two quarts:
1st, A. E. Hartshorn, $2; 2d, W. Warburton, $1.
BEANS.—Two quarts of Lima:
1st, Mrs. E. M. Gill, $3; 2d, V. Frost, $2; 3d, E. L. Lewis, $1.
SWEET CORN.—Twelve ears of any variety:
1st, A. F. Coolidge, $3; 2d, G. F. Wheeler, $2; 3d, E. L. Lewis, $1.

EGG PLANT.—Four specimens of Round Purple:
1st, A. F. Coolidge, $3; 2d, E. L. Lewis, $2.
TOMATOES.—Twelve specimens of Aristocrat:
1st, V. Frost, $3; 2d, W. Heustis & Son, $2; 3d, A. Low, $1.
Comrade:
1st, A. F. Coolidge, $3; 2d, W. Heustis & Son, $2; 3d, A. Low, $1.
May's Favorite:
1st, A. F. Coolidge, $3; 2d, A. Low, $2; 3d, J. Thorpe, $1.
Any other variety:
1st, E. L. Lewis, Success, $3; 2d, E. L. Lewis, Stone, $2; 3d, W. R. Schaefer, New Imperial, $1.
MARTYNIAS.—Twelve specimens:
1st, A. Low, $2; 2d, E. S. Converse, $1.
PEPPERS.—Twelve specimens of Squash:
1st, A. Low, $2; 2d, L. Doran, $1.
Any other variety:
1st, E. L. Lewis, $2; 2d, W. Warburton, $1.

Gratuities:—

W. Heustis & Son,	Collection,	$5.
E. L. Lewis,	"	$5.
A. Low,	"	$4.
A. Nixon,	"	$3.
W. Warburton,	"	$3.
G. D. Moore,	"	$2.
C. W. Parker,	"	$1.
J. C. Stone,	"	$1.

OCTOBER EXHIBITION OF FRUITS AND VEGETABLES.

OCTOBER 3 AND 4.

CARROTS.—Twelve specimens of Long Orange:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, C. Scully, $1.
Twelve specimens of Intermediate:
1st, H. R. Kinney, $3; 2d, H. W. Anderson, $2; 3d, W. Warburton, $1.
POTATOES.—Twelve specimens of Carman, No. 1.
1st, E. L. Lewis, $3; 2d, H. W. Anderson, $2; 3d, G. F. Wheeler, $1.
Early Fortune:
1st, H. W. Anderson, $3; 2d, A. Low, $2; 3d, E. M. Bruce, $1.
Hebron:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, C. Pfaff, $1.
Early Rose:
1st, H. R. Kinney, $3; 2d, A. Low, $2; 3d, E. L. Lewis, $1.

Any other variety:
1st, E. A. Adams, New Queen, $3; 2d, H. R. Kinney, Walter Raleigh, $2; 3d, H. R. Kinney, American Wonder, $1.

SALSIFY.—Twelve specimens:
1st, G. D. Moore, $3; 2d, V. Frost, $2; 3d, W. Heustis & Son, $1.

TURNIPS.—Twelve specimens of Flat:
1st, F. J. Kinney, $3; 2d, G. F. Wheeler, $2; 3d, G. F. Wheeler, $1.
Twelve specimens of Swedish:
1st, DeSouza Bros., $3; 2d, E. L. Lewis, $2.

ONIONS.—Twelve specimens of Danvers:
1st, W. H. Derby, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, C. Pfaff, $1.
Red:
1st, C. Pfaff, $3; 2d, DeSouza Bros., $2; 3d, E. M. Bruce, $1.
White:
1st, A. E. Hartshorn, $2; 2d, E. L Lewis, $1.
Any other variety:
1st, E. M. Bruce, $3; 2d, A. Nixon, $2; 3d, A. E. Hartshorn, $1.

SQUASHES.—Three specimens of Bay State:
1st, W. Wheeler, $3; 2d, G. F. Wheeler, $2; 3d, A. E. Hartshorn, $1.
Hubbard:
1st, A. E. Hartshorn, $3; 2d, J. C. Stone, $2; 3d, G. F. Wheeler, $1.
Hybrid Turban:
1st, G. F. Wheeler, $3; 2d, A. Low, $2; 3d, E. L. Lewis, $1.
Marrow:
1st, E. L. Lewis, $3; 2d, V. Frost, $2; 3d, J. C. Stone, $1.
Any other variety:
1st, J. Thorpe, Marblehead, $3; 2d, A. E. Hartshorn, Golden Hubbard, $2; 3d, F. J. Kinney, Golden Hubbard, $1.

CUCUMBERS.—Pair of White Spine:
1st, G. D. Moore, $3; 2d, W. H. Burpee, $2.

GREEN FLESH OR SALMON FLESH MELONS.—Four specimens:
1st, A. E. Hartshorn, $3; 2d, A. E. Hartshorn, $2; 3d, A. E. Hartshorn, $1.

WATERMELONS.—Pair:
1st, J. Thorpe, $3; 2d, J. Thorpe, $2; 3d, E. L. Lewis, $1.

BRUSSELS SPROUTS.—Half-peck:
1st, A. E. Hartshorn, $3; 2d, A. E. Hartshorn, $2.

CABBAGES.—Three specimens of Drumhead, trimmed:
1st, E. Parker, $3; 2d, W. Warburton, $2; 3d, E. R. Teele, $1.
Savoy:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, E. L. Lewis, $1.

CAULIFLOWERS.—Four specimens:
1st, E. R. Teele, $4; 2d, W. H. Teele, $3; 3d, C. M. Handley, $2.

CELERY.—Best kept during the exhibition, four roots of Paris Golden:
1st, A. Nixon, $4; 2d, A. F. Coolidge, $3; 3d, W. Heustis & Son, $2.

Any other variety:
1st, A. Nixon, $4; 2d, W. Warburton, $3.

ENDIVE.—Four specimens:
1st, A. E. Hartshorn, $3; 2d, A. Nixon, $2; 3d, E. L. Lewis, $1.

LETTUCE.—Four heads:
1st, W. Warburton, $3; 2d, A. E. Hartshorn, $2; 3d, A. Nixon, $1.

PARSLEY.—Two quarts:
1st, W. Warburton, $2; 2d, C. Pfaff, $1.

SWEET CORN.—Twelve ears:
1st, A. E. Hartshorn, $3; 2d, O. R. Robbins, $2; 3d, H. W. Anderson, $1.

EGG PLANT.—Four specimens of Round Purple:
1st, A. F. Coolidge, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.

TOMATOES.—Twelve specimens of Aristocrat:
1st, V. Frost, $3; 2d, A. F. Coolidge, $2; 3d, A. Nixon, $1.

May's Favorite:
1st, A. F. Coolidge, $3; 2d, C. Pfaff, $2; 3d, A. Low, $1.

Stone:
1st, J. Thorpe, $3; 2d, A. F. Coolidge, $2; 3d, A. Nixon, $1.

Any other variety:
1st, A. F. Coolidge, $3; 2d, J. Thorpe, $2: 3d, A. Low, $1.

PEPPERS.—Twelve specimens of Squash:
1st, A. Low, $3; 2d, A. Low, $2; 3d, A. Nixon, $1.

Any other variety:
1st, E. L. Lewis, Chinese Giant, $3; 2d, A. Low, Chinese Giant, $2; 3d, W. Warburton, Ruby King, $1.

CULINARY HERBS, GREEN.—Collection, named:
1st, W. Warburton, $5; 2d, A. Nixon, $4.

Gratuities:—

W. Heustis & Son, Collection, $5.
E. L. Lewis, " $5.
A. F. Coolidge, " $3.
A. Low, " $3.
C. W. Parker, " $3.
Goodell Farm, " $2.
G. D. Moore, " $2.
Mrs. E. M. Gill, " $1.
N. W. T. Knott, " $1.
W. Wheeler, " $1.
Mr. Simmons, New Seedling Potato, Simmons' Model, First Class Certificate of Merit.

CHRYSANTHEMUM SHOW.

NOVEMBER 6, 7, 8 AND 9.

Special Prizes.

CELERY.—Eight roots, commercial grown:
1st, A. Nixon, A Silver Medal; 2d, W. Heustis & Son, A Bronze Medal.

Regular Prizes.

PARSNIPS.—Twelve specimens of Long Smooth:
1st, W. Heustis & Son, $3; 2d, H. R. Kinney, $2; 3d, A. E. Hartshorn, $1.
Hollow Crown:
1st, W. Warburton, $3; 2d, A. E. Hartshorn, $2; 3d, H. R. Kinney, $1.
SALSIFY.—Twelve specimens:
1st, V. Frost, $3; 2d, J. C. Stone, $2; 3d, W. Heustis & Son, $1.
CUCUMBERS.—Pair:
1st, W. C. Winter, $3.
CABBAGES.—Three Red, trimmed:
1st, E. L. Lewis, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.
Savoy:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2.
BRUSSELS SPROUTS.—Half-peck:
1st, A. E. Hartshorn, $3; 2d, A. E. Hartshorn, $2; 3d, G. F. Pierce, $1.
CAULIFLOWERS.—Four specimens:
1st, W. H. Teele, $3; 2d, E. R. Teele, $2; 3d, C. M. Handley, $1.
CELERY.—Four roots:
1st, W. H. Heustis & Son, $3; 2d, A. Nixon, $2; 3d, W. Warburton, $1.
ENDIVE.—Four specimens:
1st, A. Nixon, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Four heads:
1st, G. D. Moore, $3; 2d, A. F. Coolidge, $2; 3d, J. C. Stone, $1.
CORN.—Yellow or field, twenty-five ears, traced:
1st, Goodell Farm, $3; 2d, C. Scully, $2; 3d, E. M. Bruce, $1.
TOMATOES.—Twelve specimens, grown under glass:
1st, Mrs. F. L. Ames, $3; 2d, Mrs. F. L. Ames, $2.

Gratuities:—

A. Low, Turnips, $1.
Mrs. J. Lewis, Onions, $1.
N. T. Kidder, Scotch Kale, $1.
W. Heustis & Son, Collection, $3.
A. E. Hartshorn, " $2.
G. D. Moore, " $2.
W. Warburton, " $2.
N. W. T. Knott, " $1.

WARREN HOWARD HEUSTIS,
VARNUM FROST,
WALTER RUSSELL,
AARON LOW,
GEORGE D. MOORE,
JOSHUA C. STONE,
MICHAEL SULLIVAN.

Committee on Vegetables.

Patten & Co·s Carnation House, Tewksbury, Mass.

REPORT

OF THE

COMMITTEE ON GARDENS.

FOR THE YEAR 1902.

By PATRICK NORTON, CHAIRMAN.

The past year has been full of activity for this committee and we are very much pleased to observe more care manifested in all the departments of the horticulture we have been called upon to inspect.

The season has been quite remarkable for its coolness, yet vegetation was more than a week in advance of last year, making a change necessary to an earlier date of some of the exhibitions.

PATTEN & CO.'S CARNATION HOUSE, TEWKSBURY.

The first place that we were called upon to visit was the Messrs. Patten & Co.'s house of carnations at Tewksbury, on February 13.

The house was two hundred and fifty feet long by twenty-one feet wide and was filled with the very best plants to be had, splendidly grown and profusely bloomed.

We noticed some very fine seedlings of their own production and their ambition seems to be to cultivate only the best kinds whether originated by others or by themselves.

The house was in fine order, the plants very vigorous and splendidly flowered on very long stems. Their method of growing carnations is to be commended. At our request Mr. M. A. Patten has kindly furnished the following notes on the subject.

PATRICK NORTON, ESQ., *Chairman Committee on Gardens.*

DEAR SIR:—To write upon the subject "How we grow Carnations" seems superfluous, after the quantity of carnation literature imposed on the gardening fraternity the past few years.

Our method is practically the same as used by most growers.

In January, February, or March, healthy side shoots on the flowering stem are rooted in a temperature of 50 degrees overhead and about 10 degrees more in the sand, and when rooted we put them in small pots, and repot into a larger size when necessary.

Some are kept to plant on the benches for inside growing. The rest are planted out the last of May on land that has been well manured and well worked over, in rows about eighteen inches apart, eight to ten inches in the row, according as the variety is a large or small grower. A sprinkling of bone is a good tonic. Keep the weeds down and cultivate once a week. Top the plants when the flower shoots begin to push up. Inside culture is practically the same—good ventilation and plenty of spraying, to keep down the red spider.

In August we plant the outside grown carnations in the greenhouse, shading if necessary a few days. They should be supported as soon as planted to keep them from falling over when syringing. Give them all the air they will stand. After they are well established we discontinue watering overhead. Disbudding should be attended to as the plants grow. Night temperature should be fifty to fifty-five degrees, according to the variety and the day temperature about fifteen degrees higher.

Our flowers are cut the day before shipment and placed in a cool room.

The houses are fumigated every week or ten days, for which we prefer aphis punk.

M. A. PATTEN.

TEWKSBURY, MASS.
March 13, 1903.

MRS. DAVID NEVINS' ESTATE, METHUEN.

On May 28 we visited the residence of Mrs. David Nevins at Methuen. The old homestead had been reconstructed and we

were received into what appeared to be a new house with all the modern conveniences. The grounds about the house were made beautiful by the grouping of handsome shrubbery and flowering plants and the general aspect of the place reflected good taste in the arrangements of a very comfortable home. Mrs. Nevins, being a very active woman, is constantly improving her estate by bringing yearly large parcels of realty under more intense cultivation than it ever had previously, thus expanding her domain and at the same time beautifying the town.

George D. Moore's Cucumber House and Vegetable Garden, Arlington.

The next visit was on June 18 to George D. Moore's at Arlington to inspect a house of cucumbers and a vegetable garden.

It was evident that Mr. Moore and his son keep up their reputation in growing vegetables whether under glass or in the open ground, for the results of good cultivation were evident to the most casual observer. The liberal use of fertilizers and the knowledge of how and when to apply them were manifest in the copious crops displayed on this occasion. The Moore's method of cultivation is to be commended. His system of driven wells is a complete success, giving him all the water for irrigation and other purposes he can consume.

Hon. E. S. Converse's Estate, Malden.

The fourth visit was to the fine old estate of the Hon. E. S. Converse at Malden on July 16, to inspect a house of grapes as grown by D. F. Roy, head gardener. The house contained sixteen vines each bearing from twelve to fifteen bunches of grapes. The vines are now ten years old and Mr. Roy's method of renewal is to take up a new shoot from near the base of the old vine and when large enough to "go alone," cut away the old vine. This will give him in a short time new young vines throughout the house.

The whole estate is in a very satisfactory condition forming a connecting link between the old style gardening and the new. The old-fashioned plants which have become endeared to their

owners by many years of association are judiciously planted with the newer developments in horticulture and they make the combination very pleasing.

Greycourt, the Estate of Charles H. Tenney, Methuen.

The fifth visit this year was on June 27 to Greycourt, the beautiful estate of Mr. Charles H. Tenney at Methuen. The elegance of this estate might be taken as a model for any gentleman about to make a home for himself. It comprises every convenience and luxury that can be incorporated into any estate and these comforts are so judiciously planned as to make the place "a thing of beauty and a joy forever." Our visit this spring was more particularly to see the unfolding of the trees after their winter's sleep. Nothing could be more beautiful to the lover of nature than the new growth on all the rare shrubs, trees and conifers. The blue spruces and firs were wonderfully handsome in their new clothes and excited praise from all who had the pleasure of viewing them.

Mr. Tenney's object seems to have been, in building so beautiful an estate, to give himself the satisfaction of owning a "paradise on earth" to which he can invite his friends to enjoy with him every luxury, both within doors and without, which money can buy. It is so beautifully arranged as to be commended by all who visit Greycourt. This estate is entered for the Hunnewell Triennial Premiums.

Miss E. Jackson Clark's Estate, Pomfret, Conn.

The sixth visit this year occurred on July 23, to La Plaisance, the estate of Miss E. Jackson Clark at Pomfret, Connecticut, to inspect houses of grapes and fruits as grown by John Ash, the superintendent of the estate.

The grape house contains eighteen vines of five varieties, remarkably well fruited, with bunches averaging about four pounds each, highly colored, and luscious to the taste. The estate comprises about eighty acres, sixty acres of which are used for farming and garden purposes, while about twenty acres adjoining the mansion

house are used for lawn and ornamental planting of rare trees and shrubs. The fruit house contains peaches and nectarines of no less than seven different varieties of the best of these luscious fruits. Other glass structures are devoted to growing melons, tomatoes, cucumbers, and ornamental plants, including sixteen hundred chrysanthemums. The estate is replete with everything to make it a desirable and sumptuous home. Mr. Ash furnished this committee with a letter which is appended hereto, showing his method of procedure in growing such fine grapes; also a photograph showing the results attained; all of which we submit to other growers for their perusal and observation.

THE CULTURE OF HOT HOUSE GRAPES BY JOHN ASH.

I enclose photograph of part of my house of grapes entered for competition. The dimensions of house are as follows:—Thirty-three feet long by twenty-five feet wide; roof curvilinear. In it I have planted four vines of Muscat of Alexandria, four of Gros Maroc, two of Lady Downs, four of Gros Guillaume, and four of Black Alicante. The house was built and one year old vines planted in 1897, so that my vines are now six years old and they have been fruited four years. The border is an inside one, so that I have absolute control of giving freely or withholding water as the vines may require.

This house is my second or late house, and I usually commence operations, for starting vines into growth, about February 20th, by putting on a gentle artificial heat maintaining a temperature of from 45° to 48° at night, with a rise of five degrees by day when artificial heat is required, allowing the sun heat to run up to 80° with ventilators opened slightly, continuing this temperature until the buds show signs of life when I raised the temperature ten degrees admitting air on every bright day, carefully avoiding cold draught on young and tender foliage, which "young leaves" appear in two or three weeks after buds show signs of life. At this time I raise to my maximum temperature of 65° nights and 70° by day artificial heat; sun heat from 80° to 88° with a free circulation of air on every favorable occasion.

Syringing.

Vines are syringed freely morning and afternoon on all bright days until they are in bloom when syringing is discontinued and a drier atmosphere maintained, only sprinkling floor about noon on bright days, until fruits are set, when we again syringe freely until grapes commence coloring, when we cease putting any water on foliage or fruits.

Watering and Feeding.

The border is given a thorough soaking with tepid water when first heat is introduced, and again as soon as bunches show themselves. Then after grapes have been thinned, weak liquid manure is given to help to swell up the berries and continued as the border may require until grapes show color, when we cease giving any more liquid manure, and use only clear water, until fruits are ripe, when water is given only in sufficient quantities to prevent shriveling of berries, and a drier atmosphere maintained, with abundant air on all favorable occasions.

MRS J. C. WHITIN'S ESTATE, WHITINSVILLE.

On August 1, the committee visited the estate of Mrs. J. C. Whitin at Whitinsville, to inspect a house of foreign grapes and a house of other fruits as grown by Wm. McAllister, head gardener on the estate. The grape houses are two in number but the one we were called to inspect contained ten vines six years old averaging about twenty bunches to each vine. The varieties consisted of Grizzly Frontignan, Lady Downs, Muscat of Alexandria, Mrs. Pearson, Mrs. Prince, Black Alicante, Muscat Hamburg, Wethersfield Court, and Golden Queen. The bunches were well colored and the fruit was of luscious quality, but the bunches would have been larger if the vines had not been allowed to carry so many of them.

The fruit house was a great surprise to the committee, as it was of the most approved construction and contained the most splendid collection of fruit ever seen by the committee. The house was a span roof running east and west with a walk down the

Grape House of Miss E. Jackson Clark, Pomfret, Conn.

centre with trellises on each side across the house with peaches and nectarines trained espalier to each, and heavily fruited. Between the trellises stood forty pots of fruit, also well filled with peaches, etc.

Some of the peaches we measured were three inches in diameter and of perfect quality. It is with great pleasure that we award to this fruit house the first special prize offered by Edward Hatch for fruit houses.

This house was so exceptionally fine that we cannot endorse too much its construction and method of planting and fruiting, and as a slight token of our appreciation we award it the Silver Medal of the Massachusetts Horticultural Society.

We are pleased to add to this report a statement from William McAllister on the culture of hothouse fruits.

The Fruit-house of Mrs. J. C. Whitin, Whitinsville, Massachusetts, was built in the summer of 1900, size 164x25 feet. It is heated with hot water, two inch wrought iron pipes used. The house is an even span running east and west and trellises put across that the trees may get the full benefit of the sun. Trees are much easier taken care of than where they are trained up the roof; especially when syringing, a person can get at both sides of the trees without any trouble.

In this house are planted twenty-two trees on trellises and forty in pots. One third of these are nectarines, our preference being peaches. We think the best varieties are Royal George, Barrington, Noblesse, Crimson Galande, Early Silver, Princess of Wales, Sea Eagle, Elberta, Alexander Noblesse, Golden Eagle, and for nectarines, Cardinal, Early Rivers, Milton, Lord Napier, Newton, Pine Apple, Rivers Orange, and Victoria. These are good varieties of nectarines and need the same treatment as the peach. This house was planted the first week in November. We believe in planting in the autumn as soon as the trees shed their leaves. Our time for pruning is usually in January, and allow them to start to grow in February, having them flower by the end of March or the first week in April with fruit in July. The temperature must be kept rather low, not over 45° at night at first, increasing temperature as they advance in growth.

The soil used for the borders is a turfy loam from good pasture land. In this way I have had very good results.

WILLIAM MCALLISTER.

H. H. ROGERS' ESTATE, FAIRHAVEN.

This estate is entered for the Hunnewell Triennial premiums and this was our second visit. The general character of the estate is the same as last year although a considerable plot of ground had been reclaimed and brought under cultivation. The estate consists of about thirty acres which is nearly all level land with a portion in forest. On this Mr. Garthley, the gardener, is yearly encroaching and bringing it into such shape as to grow flowers and flowering shrubs.

The estate has all the electric power needed to light the buildings, the grounds, and run all the machinery needed to carry on a large establishment. Mr. Rogers' last work in beautifying the town of Fairhaven is the building of an elegant and costly church edifice for the use of one of the religious societies of the town. His benefactions to the town in building public edifices are truly wonderful and we are glad to note the public spirit he manifests.

We were invited to visit these buildings, which we did with great appreciation, and afterwards were driven all over the old whaling town of New Bedford and into its beautiful suburbs. A day of "restful pleasure" was enjoyed by the committee.

EDWARD J. MITTON'S CROTON HOUSE AT BROOKLINE.

On the 21st of August we were called upon to inspect a house entirely filled with crotons. This was a new experience for your committee as it is well known that crotons are cultivated entirely for their foliage. Mr. J. Lawson, the gardener, is particularly fond of these quaint plants and grows them to perfection.

The house contained eighty plants of about fifty varieties and their luxurious growth showed the high cultivation bestowed on them by the gardener. The colorings of the leaves were remarkable and the endless shapes of the foliage were still more so.

The house had no other plants therein, yet looked at as a whole it presented the appearance of a house filled with endless varieties of flowering plants in full bloom.

It was a remarkable house and once seen will long be remembered.

J. B. Lawrence's Dahlia Farm, Abington.

On the 9th of September we visited the dahlia farm of Mr. and Mrs. Lawrence which consisted of one hundred varieties of dahlias and two thousand plants. They were of the best kinds, were in full bloom, and made a grand appearance. Some of the best were named as follows:

King of the Cactus,	Mrs. Gladstone,	Frank Smith,
Maid of Kent,	Henry Patchett,	Grand Duke,
Nero,	Lucy Faucett,	Catharine,
Mrs. Dexter,	John Lamont,	Fernleaf Beauty,
Dr. Kirtland,	White Swan,	Meteor,
Fanny Purchase,	Livoni,	Mrs. Snow.
Wm. Agnew,	Alice Emily,	

William P. Lothrop's Dahlia Farm, East Bridgewater.

Mr. Lothrop's farm, consisting of six acres of dahlias, was inspected by your committee on the 16th of September and then it was in full bloom. There were over 25,000 plants, comprising over 100 varieties, and each variety was planted by itself. The great show of brilliant color and variety of shapes made a gorgeous spectacle. One portion of the garden was made to grow dwarf plants, by judicious pruning; other parts were left to grow naturally supported by stakes.

Mr. Lothrop has kindly prepared at the request of the Garden Committee the following notes on the dahlia and its cultivation.

Mr. Patrick Norton, Dorchester, Mass.

My first interest in dahlias was aroused in 1893 when I bought one dozen for my own pleasure.

There were supposed to be twelve named varieties and I looked forward with pleasure to the blooming season; but when it arrived I found that my attention had been lavished on a collection containing three inferior kinds.

The season following I bought eighty-eight varieties from various American seedsmen and found these almost wholly unsatisfactory.

I immediately decided that the majority of American dahlias were second rate or less; also that there was a market here for the finer kinds.

Before the next spring a partnership was formed under the firm name of Lothrop & Higgins for the purpose of establishing a dahlia specialty business.

That year we imported varieties from England, Holland, and Germany, and were very successful, finding the demand far greater than our ability to supply. Since then we have continually searched Europe for new and better kinds and have been amply rewarded by an unprecedented success at the New England and New York exhibitions.

In the autumn of 1901 Mr. Higgins retired from the firm.

All through the rapid growth of the business I have found that the increase in the number of my imported varieties has been more than paralleled by an increase in public interest, and in the demand for the newer kinds.

In regard to flower shows, I wish to say that the fact of these exhibitions being public educators was never more evident than since dahlias commenced to rise in popularity. I have obtained varieties in Germany to test, in lots of one or two of a kind, and have been so pleased with some special bloom that I exhibited it at the Mass. Hort. Society; before the time for planting arrived the next spring I had received orders and inquiries for this variety from six states.

In addition to importing I have obtained several new ones by scientific crossing; the most remarkable instance is the result of a cross between the Grand Duke Alexis and A. D. Livoni, the progeny in plant, shows all the traits of the G. D. Alexis, also in the shape and size of the bloom, but this has the true pink color of the A. D. Livoni.

In regard to planting: Here in New England the proper time is from May 15th to June 10th.

It must be understood of course that this is not for *early* blooms but for *best* blooms. If one desires smaller flowers and a greater

Dahlia Farm of Wm. P. Lothrop, East Bridgewater, Mass.

A field of "Perle de la tête d'Or."

quantity he should plant by May 15, nipping every bud which appears before August 1st. By this time the plant will have attained its full growth and its whole energy will be thrown into blooming.

The single stem branching system offers the best and prettiest method of culture. It is as follows:

One shoot only is allowed to grow. When the shoot has two pairs of leaves and an undeveloped growth on the top, it is pinched back as far as the upper leaves. Four branches will then start, one at each leaf. When the plant is grown it will have a short, strong, single stem, which comes only an inch or two above ground, and four long branches which are strong enough to hold themselves up without stakes, giving the plant a neat bushy appearance.

If planted between the two dates, as first suggested, they will reach flowering size at about the proper time. There are, however, a few kinds which should invariably be staked; such as Frank Smith, Beatrice (cactus), Grand Duke Alexis, Dr. J. P. Kirtland, Ernest Glasse, etc.

In regard to fertilizer: I plan to change each year; one year using barn manure; another prepared fertilizer; the next raw chemicals, such as nitrate of soda or muriate of potash.

My experience has taught me that the kind and amount of fertilizer used are not of as great moment as is the cultural care.

Just as soon as the last tuber is covered I commence to cultivate and continue doing this each week and sometimes twice a week until the blooming season arrives. The last few times using a fine twelve-tooth cultivator. I then give the second hoeing which is also the final one. In this way the ground is left as fine and smooth as a garden.

Regarding storage: The tubers are lifted immediately after the first killing frost, dried in the field three or four hours and laid in a dark shed. When all are dug they are separated and all packed in dry sand in a cellar which ranges in temperature from 38 to 42 degrees.

W. P. LOTHROP.

East Bridgewater, Mass.

Greycourt, the Summer Home of Charles H. Tenney, Methuen.

On October seventh your committee was called upon to make their third year's call at this beautiful home, thus completing the time of entry for the H. H. Hunnewell Triennial Premiums.

The more we see of this place the better we like it and we can now more fully recommend it as a model of perfection to gentlemen about to build homes to live in. In the spring time the trees, just showing their new growth, were beautiful, but in the fall they had put on the still more beautiful appearance of maturity, winding up the season with all the colors with which nature's alchemy could endow them.

They were noble trees and everyone a splendid specimen of its kind with plenty of space in which to expand and develop. The President of our Society walked all over the place one morning in October and when asked his opinion of it he replied that it was "the noblest place in the Commonwealth," and this only confirms the judgment of your committee.

Mr. Tenney is always beautifying his estate and his last endeavor is the completion of a splendid bowling green where the noble and manly sport can be enjoyed on a gentleman's estate. His inclination seems to lead him in the direction of building such structures as will beautify the estate and at the same time contribute to the pleasures of his numerous guests.

We take sincere pleasure in awarding this estate the H. H. Hunnewell Triennial Premium.

Mr. Tenney has had in his employ ever since he began to improve this estate a faithful and enthusiastic gardener, Mr. Gall, who has carried out in a masterful way all the instructions and plans for beautifying these grounds; and how well he has done his work the estate as it stands today speaks for itself.

Mrs. A. W. Spencer's Chrysanthemum House, South Framingham.

On the 30th of October we visited the estate of Mrs. A. W. Spencer, at South Framingham, to inspect a house of chrysanthe-

mums planted on benches. There were three hundred and fifty plants of thirty varieties of the best kinds grown. These were all grown for one flower each and presented a beautiful appearance. Alex McKay the gardener, also had in other houses four hundred and thirty-five plants in pots which were fully as handsome blooms as those on benches, and he likes to grow them in pots because they are so easily moved to make room for other incoming plants. Mr. McKay is to be commended for his proficiency in growing the Queen of Autumn.

Hon. E. S. Converse's Estate, Malden.

The last visit of the season was on the 4th of November to inspect two houses of chrysanthemums, one grown on benches and the other house filled with large plants, interspersed with fine foliage plants, to produce a fine effect.

The house planted on benches contained five hundred plants of one hundred and sixty varieties, well flowered, and presented a fine appearance. The great number of varieties added very materially to the attraction.

The house of chrysanthemums arranged for effect with other plants was an unqualified success and Mr. D. F. Roy had occasion to feel elated at the success of his endeavors.

The house was beautifully arranged and its beauty was enhanced by having so many standard chrysanthemums to break up the otherwise monotonous appearance of the low-growing plants. We commend Mr. Roy's good taste and proficiency in growing and arranging chrysanthemums.

Mr. Roy has sent us the accompanying notes on the cultivation of the chrysanthemum which will add to the value of this report.

Mr. Patrick Norton.

Dear Sir:—In answer to yours of the 26th instant I would say that we propagate our chrysanthemums, for growing on benches, the last week in April. When they are well rooted we put them in two and one-half (2½) inch pots using loam, leaf-soil, and sand; then we plunge the pots in ashes in a cold frame, which gives us short-jointed stocky, plants. About the second

week in June we plant in benches, using a rich compost consisting of sod cow manure and bone meal. As the soil in this locality is rather light we add one load of clay to every three of loam. When planting we firm the soil well around the plant, leaving a hollow around each one for water. We are very careful about watering until the plants get hold of the soil. Then they take more water but we never allow the soil to be saturated. About the first week in August we give a mulch of well-rotted cow manure which keeps the roots cool and acts as a fertilizer. During the hot months we syringe three times a day.

We feed with liquid manure when in our judgment the plants require it, using sheep, cow, and horse manure at intervals. Commercial fertilizers we use very sparingly; possibly a dressing of Clay's and a dose of nitrate of soda, a few times during the season. The night temperature is kept between 50° and 60°. When the blossoms begin to open we use shading made of light cloth.

The foregoing remarks practically cover our mode of cultivating the Queen of Autumn.

Yours truly,

D. F. Roy.

Malden, Mass.

The Prizes and Gratuities awarded this year are as follows:

H. H. Hunnewell Triennial Premium.

For an estate of not less than three acres, which shall be laid out with the most taste, planted most judiciously, and kept in the best order for three consecutive years:

First, Charles H. Tenney $160 00

Special Prizes from the John A. Lowell Fund.

For the best house of Chrysanthemums, arranged for effect with other plants:

First, Hon. E. S. Converse 30 00

For the best house or houses of Chrysanthemums grown on benches:

First, Hon. E. S. Converse 30 00

Second, Mrs. A. W. Spencer 20 00

Special Prizes offered by Edward Hatch.

For the best Fruit House, plants grown in pots or tubs included:	
First, Mrs J. C. Whitin	$30 00
Second, Miss E. J. Clark	20 00

Society's Prizes.

For the best House of Foreign Grapes:	
First, Miss E. J. Clark	30 00
Second, Mrs. J. C. Whitin	20 00
For the best House of Carnations:	
First, Patten & Company	30 00
For the best Vegetable Garden:	
First, George D. Moore	30 00
For the best House of Cucumbers:	
First, George D. Moore	30 00

Gratuities.

Hon. E. S. Converse, House of Grapes	20 00
E. J. Mitton, House of Crotons	25 00
J. B. Lawrence, Dahlia Farm	15 00

William P. Lothrop, Dahlia Farm, a Silver Gilt Medal.

Miss E. J. Clark, Superior Cultivation of Grapes, a Silver Medal.

Mrs. J. C. Whitin, Superior Cultivation of Nectarines and Peaches, a Silver Medal.

Respectfully submitted,

PATRICK NORTON,
ARTHUR H. FEWKES,
J. WOODWARD MANNING,
E. W. WOOD,
WARREN H. HEUSTIS,
J. H. WOODFORD,
JACKSON T. DAWSON,
HENRY W. WILSON.

Committee on Gardens.

REPORT

OF THE

Committee on School Gardens and Children's Herbariums

FOR THE YEAR 1902.

By HENRY LINCOLN CLAPP, CHAIRMAN.

Weeding. — George Putnam School Garden.

The experience in gardening obtained during the summers of 1900 and 1901 made it evident that a smaller number of beds of larger dimensions would give more satisfactory results. The beds (3½ by 10 ft.) were too small to furnish employment to the young gardeners except for a very short period.

Perhaps the gardeners had put their beds in perfect order after school hours during the previous afternoons, and could find no work to do when the afternoon (Monday) appointed for gardening came. Then, naturally enough for children, they found

Making beds on rough plowed land. — George Putnam School Garden.

something to do that was not on the school program. Hoes were put to very singular uses in the short absences of the director, lumps of earth took wings, and foot-prints of human beings made intaglios in the soft earth of the beds. These misplaced impressions were observed with a good deal of solemnity by the director and aberrant gardeners. The latter always appeared to know more about planting seeds than planting footsteps, probably from the fact that the former is done so deliberately and the latter so precipitately.

Under these natural conditions eighty pupils seemed a rather generous number for one pair of eyes which were of the ordinary

wide-angled species, but, nevertheless, could take in only about one quadrant at a time.

Moreover, a much greater variety of plants can be raised on a large bed than on a small one. This makes the work far more interesting. The produce of a large bed amounts to something; it will make some show on the dinner table. The work seems more like real work and less like play work.

Accordingly the beds were cut down to forty, each 8 by 10 ft. This was done in a very simple manner. The path between each pair of old beds was dug up and leveled up by the addition of soil in such a manner as to unite the two beds into one large one. No new paths had to be made.

Seedlings in May. — George Putnam School Garden.

The forty pupils who were selected to cultivate the beds were much more interested and far steadier than the eighty who had worked the year before. They could be left to work without an overseer. They considered their work as the real thing. They raised immense parsnips, summer squashes, radishes, lettuce, carrots, beets, beans, corn, kohl-rabi, etc., besides a greater variety of flowering plants.

The janitor frequently found them at work until six o'clock P. M. and even later, and on Saturdays also. Some kept their

gardens in fine order during the summer vacation, though they had no director to direct and encourage them.

One day in October two photographers and a reporter from the office of the "Boston Globe" came out to photograph and write an account of the garden. Each pupil was asked to state what he had raised. Three pictures were taken and they appeared afterward in the "Globe." One represented a boy with an arm load of huge parsnips which he carried home to eat.

Monday, October 27, the pupils scraped up bushels of leaves that had fallen from the ash and maple trees growing about the school grounds and added them to the weeds and vegetable rubbish of their gardens.

Weeds for the fire. — George Putnam School Garden.

Then the director set fire to one heap placed in the centre of one bed, and soon the fire was carried to other heaps until there were a score of small fires sending off flames and volumes of

smoke. Then there was hurrying and scurrying to get more leaves to keep the fires going, and there was a scene of activity that is seen on the premises only once a year. The result was the conversion of an immense amount of rubbish into ashes with which the beds will be fertilized, not to speak of the admirable exercise and exhilaration of mind attending the whole work. Quite different from book learning.

Lining out beds. — George Putnam School Garden.

It is a difficult matter for many pupils to keep their beds in line because they stick so closely to their own beds and view them from so short a range. They are repeatedly directed to go some distance away from their own beds and then compare their edges with those of other gardens. Pupils from twelve to fifteen years of age do not know what "sighting" means until they are taught in the garden.

November 3 the paths were straightened and November 10 the bulbs were planted. Advice had been previously given as to the most satisfactory bloomers, the best bulbs for the money spent, the manner of planting,— depth, distance apart, preparation of soil, etc.

Visitation Day. — George Putnam School Garden.

Weeding after School. — George Putnam School Garden.

Some pupils worked till dark; some carted in dressing on Saturday; and all worked hard without being conscious of it. It is the bodily action that quickens the mental and makes garden work suitable for and enjoyable to children.

SUCCESSES AND FAILURES.

The gardens established by the National Cash Register Company, Hartford School of Horticulture, Twentieth Century Club

of this city and Hyannis State Normal School are all in a flourishing condition because they have a good financial backing.

The gardens in Medford, Wenham, Trenton, and Louisville, Kentucky, I have reason to believe, have failed, and mainly, in my opinion, because they did not have adequate financial support. The George Putnam School garden seems to be the only one without outside aid that is still carried on.

It is interesting to learn that Mr. Philip Emerson, Principal of the Cobbet School, Lynn, Mass., has started a school garden, which it is expected will be entered next summer for one of the school garden prizes offered by this Society.

ADEQUATE SUPPORT OF SCHOOL GARDENS.

School gardens should be supported as other institutions of learning are supported, if good results are expected. No doubt, the school garden in the beginning may be worked with much enthusiasm, partly because it is a novel and reasonable undertaking; but hard work which only entails money obligations to a considerable amount soon diminishes the enthusiasm of both teachers and pupils. To work your passage and pay, too, soon comes to border on drudgery.

Simply to put seed into the ground expecting nature to do the rest in producing a handsome crop is expecting too much. There are fertilizers, seeds, tools and perhaps young plants to be bought every year. To leave the garden to take care of itself three months in summer is not the way to ensure fine crops in autumn. Continuous care of plants is necessary; and the only way to provide for that is to employ a director and pay him for directing. Premiums for the best results would also promote the work. This is the way the Dayton boys' gardens are carried on so successfully. So the ideal summer school, or vacation school, might be found in a school garden.

But weeds do not make much progress in a single night, and to hoe a small bed every day would be quite unnecessary. Other opportunities for the children's activities must be furnished— swings, teeter boards, ladders, sand piles, vaulting bars, etc.,— all of which the Massachusetts Civic League has provided in their establishment on Columbus Avenue, Boston.

Here is an opportunity for any enterprising Society to do a great work in cultivating horticultural tastes in children and at the same time win an enviable reputation for service of the greatest importance. The opportunity has been seized already. It is not repeating too much to say again that the National Cash Register Company, Twentieth Century Club, Massachusetts Civic League, Hyannis State Normal School, and Hartford School of Horticulture are paying all the expenses of gardens from year to year. So all the advantages of school gardens will be sure to be made manifest by these Societies or schools.

It would be quite proper for any well-endowed Society to undertake a similar work,—the actual support of a school garden to a successful result. A hundred dollars a year would do it. Probably fifty dollars would suffice where a garden has been made on land free of cost.

At present this Society on a small amount of money (this year $60) is doing as much as can be done, offering premiums and printing and circulating reports. But school gardens established by means of the encouragement of these premiums, without other means of support cannot endure. They cannot live on reports, however spicy and well illustrated they may be. They never should be expected to be self-supporting.

Imagination is quite unable to picture the progress that would be made in horticulture and agriculture in Massachusetts in a few years, if a few thousand dollars a year were devoted to the support of school gardens where the culture of flowers, vegetables and fruits, large and small, might be practiced. This kind of seed ought to be planted, and those who really desire to do the very best service are planting it.

The honors that should be ours should not go to others simply on account of inadvertence, if there is no other reason.

The words of Ex-President Appleton on the occasion of the dedication of the new Horticultural Hall, "the encouragement of window gardening and school gardens is a most commendable feature of our work," should mean something substantial on which practical work can be founded and sustained. In fact, Massachusetts should take up the work.

HALIFAX, N. S., HOME GARDENS.

August 27, 1902, Mr. A. H. McKay, Superintendent of Schools in Halifax, N. S., called upon me and stated that the children of that city have been induced to make and cultivate gardens at their homes, for the reason that they will be likely to take better care of their home gardens than school gardens during the summer vacation, and they can suit their own convenience in working in them. Moreover, they will not be required to walk any distance worth mentioning and water will always be available, which is a very important matter in maintaining a garden successfully.

As previously intimated, the most serious drawback in the conduct of school gardens is their general neglect during the summer vacation, unless a director is employed to meet the children regularly, or substantial money prizes are offered for the best gardens.

A grant of money by the city of Halifax ensures the establishment and maintenance of the children's home gardens. That is an example worth following by the city of Boston or any other that would be in the front rank of educational and civilizing processes. The matter should not be left to be undertaken and carried through by clubs and private individuals.

President Eliot says work is the greatest civilizer, and there is no better work for children than that found in a school garden or a garden at home. The school garden is, perhaps, more educative while the children are going to school, because the reasons for results are given while the plants are growing; theory and practice are properly connected. In the home garden explanations are largely wanting, provision for success or failure is far less certain, and what is learned comes more circuitously and therefore more slowly.

HOME GARDENS IN ST. LOUIS.

The Sunday "Post-Dispatch" of St. Louis in 1902 offered thirteen prizes for home gardens made by children under sixteen years of age. Two hundred seventy-one children entered the contest. The Englemann Botanical Club furnished flower seeds at two cents a package, and many packages were sold.

The report says, "Ash heaps, back yards, bare spots of dark unsightly soil have been converted into exquisite flower beds and nice grassy lawns. Hideous board fences have been transformed

into beautiful emerald walls. Never in the history of St. Louis have so many flowers adorned its yards. The sick in the various hospitals have been cheered by the flowers, churches and homes have been decorated with them, and hundreds of friends of the children have shared the beauty and fragrance of the little flower gardens. The children have learned to know and care for flowers and have a better understanding of nature. They have changed many a humdrum yard and many a faded street into the dignity of a lawn or a beautiful thoroughfare.

The good effects are far-reaching in that hundreds who did not enter the contest were induced to make special efforts for home improvement."

A committee of three awarded the prizes: — Mr. H. C. Irish, assistant director of the Missouri Botanical Garden, Miss Isabel Mulford, a former teacher of botany in Vassar College and Mr. W. J. Stevens, principal of the Pope School. Mr. Stevens originated the plan by which Carthage, Mo., was made the most beautiful city in Missouri. Evidently these people consider that their time, skill and efforts are well spent in inducing children to make gardens at home and take care of them.

The prizes consisted of gold coins,— $20 for the first, $10 for the second, $5 for the third, and $1 each for the others taken in the order of merit. There were two contestants for the third prize so nearly alike in merit that $5 was awarded to each. The total awards amounted to $50.

It is worthy of notice that this work was carried out by a paper company, not by a horticultural society that might be naturally expected to favor gardening.

GARDENS OF THE MASSACHUSETTS CIVIC LEAGUE.

An admirable enterprise for the education and amusement of poor children during the school vacation has been inaugurated by the Massachusetts Civic League, Boston, Mass.

There is a large area of land on Columbus Avenue fitted up with all sorts of apparatus for the exercise and amusement of children— swings, teeter boards, sliding poles, sand piles, ladders, spaces for playing base ball, lawn tennis, croquet, etc., and a full corps of directors of games.

But especial mention should be made of 350 children's gardens, 110 of them being on Columbus Avenue. The beds are about 3½ by 6 feet in area and all together contain a great variety of garden vegetables and flowers. Some are neatly outlined with small rounded stones whitewashed. At four o'clock each afternoon the children who choose to do so come to water the gardens; and those belonging to absentees get just as much water as any others. The children appear to be delighted to use the watering pots; and some in their ardor wet themselves.

Children's Gardens, Massachusetts Civic League, Boston.

One little miss of ten told me that when she first received her garden she "got all wet in front." Then she continued, "The fence was all painted too, and I leaned up against it, like this, and got paint all over my dress. When I went home my mother said I must go to bed for making my dress look so. So I went to bed and staid about five minutes, and then got up and went out on the front doorsteps to play."

"Did your mother know when you went out?" I asked.

"No," she replied.

Naturally enough the gardens show various degrees of success, and give no evidence of being molested by marauders. As I went into the grounds I saw two girls, about seven years old, rather better dressed than most of the children, picking flowers, of which they had quite a little bunch apiece. "Is that your bed?" I asked. "No," said one of the girls, "It belongs to a girl whom I

Watering.—Massachusetts Civic League Gardens, Boston.

know." "What is her name," I continued. She replied, "I can't think of it just now, but I know her when I see her."

The young lady who has charge of the garden work keeps a record of the condition of the beds, and neglect of a bed results in its loss, and another child gets it.

Something besides gardening is taught — patience, forbearance, respect for the rights of others, respect for labor, neighborly assistance, with the thoughts of doing as much as possible, instead

of as little, which seems to be the animating principle in this age of strikes. No doubt the children will get over their unselfishness later on, but they are started aright.

My camera to a good degree will make up for the inadequacy of my words in describing these gardens.

Watering. — Massachusetts Civic League Gardens, Boston.

WEST INDIAN SCHOOL GARDENS.

The school garden movement has reached Jamaica and other islands of the West Indies.

The last number of "The West Indian Bulletin" devotes considerable space to the subject of school gardens, and clearly shows how estimable an educational means the school garden is thought to be in the West Indian Islands.

Among the many wise and suggestive remarks made are these: "School gardens and school plots are now a recognized feature in many of the West Indian Islands." "Object lessons in country schools should tend to produce a taste for work and study out of doors. All good object teaching should give the scholars something to do with their hands."

Several plans of gardens and schemes of work in actual operation are given. The first scheme is carried out by a village school of one hundred and eighteen pupils with one head teacher and three assistants. The second employs one hundred pupils in a rural district. Each plot is thirteen feet square and is planted with a good variety of vegetables. The third makes provision for one hundred and twenty pupils under the charge of three certificated masters. Plants, insect and other animal life are carefully elaborated in the scheme and as carefully worked out by the children. The boys of this school collected, dried and mounted over two hundred different species of wild flowers.

The fourth is the most elaborate scheme of all, and is worked out by one hundred and twenty pupils under the instruction of a master and two assistants in the town of Kent.

The course is really scientific and includes the study of air, seeds, soils, weeds, grasses, shoots and roots by means of nicely contrived apparatus in doors in inclement weather and much observation and work out of doors in pleasant weather.

This is a very meagre summary of the article, but it shows clearly enough that Massachusetts can look to the West Indian Islands with profit as regards cultivating in children a taste for horticulture and country life. And the government is doing it. The government of Massachusetts is doing practically nothing about it, but is still hammering away on curricula that point the children pretty straight to a shop of some kind.

In a previous number of "The West Indian Bulletin," Vol. 3, No. 2, 1902, is this mention of one school garden:

"In one of the most successful schools, Mount Fletcher in St. Andrew, I am informed that the school children beg for seeds and cuttings to take home, and that not only are flowers eagerly sought after to cultivate but considerable quantities of vegetables are now raised locally and either consumed or sent to the Kingston market. The grant of £8.7s given in this instance is undoubtedly money well spent. The school garden is well worth a visit from any one who is interested in the development of agriculture amongst the people." The sales of the produce of this garden amounted to twenty-five dollars.

It will be noticed that the expenses exceeded the receipts by about fifteen dollars; in other words the garden was not self-

supporting; and the gentleman who reported on school garden work in Jamaica mentioned the deficiency with a tone of regret. What school ever is self-supporting in the short run? It is the result of instruction in the long run that shows that schools pay. If it cost forty dollars to instruct forty children in garden work during one summer, no doubt the value of the instruction outweighed the cost.

The Barbados "Agricultural News," January 3, 1903, says: "School gardens are rapidly becoming recognized features of the educational work in several of the colonies. The time is approaching when every child in the West Indies will be enabled to learn practically the principles underlying agriculture."

ARTICLES AND LECTURES ON SCHOOL GARDENS.

"Current Literature" for November, 1902, contained a two-column article on school gardens, summarized from another article written by Mr. Dick J. Crosby in the "Outlook." In speaking of school garden work the editor says, "It is the kind of hard work that takes children out of doors and makes them feel like whistling, and no amount of such work ever makes nervous wrecks.

"The school garden should be found in connection with every kindergarten. The little fellows learning to recognize colors and geometrical forms should see the more pleasing natural colors and forms. They should be given an opportunity to see how the plant gets out of the seed, how the stem pushes upward and the little leaves turn green, while the white root pushes down into the soil. They should plant a few seeds for themselves, and then water and care for the plants when they come up. Thus will they learn and love to learn; thus will they get out in the pure air and sunshine."

Mr. George Henry Knight of New York has written several very readable articles on school gardens, and is now preparing another.

Dr. F. M. Powell of Glenwood, Iowa, has a strong article on that same subject in the Transactions of the Iowa Horticultural Society, now in our library.

Dr. Helen C. Putnam of Providence wrote several articles for the "Boston Transcript" which were afterwards put into pamphlet form. She made a very strong plea for the establishment of school gardens.

Mr. Dick J. Crosby of the Agricultural Department at Washington has prepared a stereopticon lecture on the subject.

Mr. H. D. Hemenway, Director of the Hartford School of Horticulture, is doing the same.

I have made eighty slides, a part of which were shown at a meeting of the Boston Society of Natural History last winter, and shall show all of them at a meeting of the Rhode Island Horticultural Society in Sayles Hall, Brown University, Wednesday, February 18, 1903.

Mr. Samuel B. Greene, Professor of Horticulture and Forestry, University of Minnesota, writes me: "We are trying to do something of the sort in this section and want to get all the helpful data we can bearing on the subject. If your report for 1901 has been issued, I would like very much to get a copy of it, and would like to know if you have any collection of photographs on this subject that we could obtain. We shall be glad to take care of any expense incident to obtaining this matter."

From this I presume that he will prepare an illustrated lecture. I sent him a number of reports and magazine articles treating of the matter.

Our secretary informs me that he has many more calls for school garden reports than for all the other reports of this Society combined.

A long and valuable list of articles on school gardens written by prominent persons will be found on page 249. I am glad to know that such prominent and influential people do not esteem the school garden propaganda beneath their dignity, nor unworthy of their time and studious attention. They realize that children will be men and women one of these days, and what their tastes for or against horticulture may be is a matter of considerable concern, not only as regards their own happiness and usefulness but as regards the progress of horticulture itself.

It ought to be a cause for great rejoicing that a new way has been found for interesting and educating city-bred children by raising plants, wild or cultivated. Any horticultural society might well rejoice every time it induces a single person, man or boy, woman or girl, to get possession "of a little farm well tilled," though it be nothing more than a bed eight by ten feet.

WOMEN AS GARDENERS.

RUMORED MOVEMENT TO START NEW DEPARTMENT AT WELLESLEY.

(Post, November 17, 1902.)

WELLESLEY, November 16.—Wellesley College, ever on the move toward the goal of progression, has in contemplation, according to friends of the college, a movement to install a new department of learning for women, namely, that of gardening.

While this may be somewhat of a novelty to Americans, there is nothing wonderful about it in England, where such an institution for female education has been established for the past fifteen years, and hundreds of successful graduates turned out.

The promoters of the new idea at Wellesley claim that no other female institution of learning in America has better advantages and facilities to conduct such a department, and as an argument point to their own spacious grounds and the splendid property and hothouses on the Hunnewell estate, famed the whole world over.

The Horticultural College at Swanley, Eng., covers all departments of farming except that of cattle. Women who hold graduates' certificates from it know the science of farming in the flower garden, in the vegetable garden and in the orchards, and, besides, what few graduates of ordinary agricultural colleges have any experience in, the manual labor of all kinds of horticultural work. They can hoe and spade when they have finished their work courses as well as any farm hand. Instruction is given, too, in the conduct of a dairy, the raising of bees and of chickens; in short, they learn in a few years what most men farmers who go to school to mother nature spend their lives in learning.

GIRLS STUDYING FARMING.

More than fifty girls are studying scientific farming in the Minneapolis College of Agriculture. The course they take includes botany, chemistry, physics and geology, requiring in the first two years two terms of each. They pay special attention to cooking, laundering, household economics, furnishing houses and social culture. They learn to plan buildings and to lay out grounds. By this means it is hoped that farmers can be provided with wives who will know enough about making life in the country attractive to keep the boys from emigrating to the towns and cities.

PLANT STUDY IN WASHINGTON, D. C.

Through the influence of Professor Galloway, of the United States Department of Agriculture, a plot of ground one hundred and fifty feet square, or a little more than half an acre, and a greenhouse have been secured for the purpose of instructing the pupils of the Washington Normal School in the common operations of plant propagation, such as making cuttings and placing them in sand to root; then potting and taking care of the young plants. They are to have all the facilities for studying botany, such as the grass gardens, the economic and medicinal plants, the fine collection of native and exotic shrubs and trees and a magnificent collection of herbarium specimens. If this work proves successful its scope will be enlarged.

There is an idea in Washington that instruction on the theory and practice of plant growth will in some way find a place in the common schools of the country; and so the Normal School girls are being prepared to give that instruction.

The work proposed was outlined in the "Boston Sunday Journal," January 4, 1903, in a three column article illustrated by four photographic reproductions.

Miss Sipe, the science teacher of the Washington Normal School, has charge of the work.

LIST OF ARTICLES PUBLISHED ON SCHOOL GARDENS.

ARRANGED IN CHRONOLOGICAL ORDER. COMPILED BY MR. H. D. HEMENWAY.

1890.

"Horticultural Education for Children," by Henry L. Clapp, Principal of George Putnam School, Roxbury. Transactions of Massachusetts Horticultural Society for the year 1890.

1891 to 1902.

Report of the Committee on School Gardens and Children's Herbariums of the Massachusetts Horticultural Society, by Henry L. Clapp, Chairman, Boston, Mass.

1898.

"School Gardens," by Henry L. Clapp. Published in "Appleton's Science Monthly," February.

Teachers' Manual for Elementary and High Schools. First Edition.

State of Nevada, Carson City, J. G. McCarthy, Superintendent. "Nature Study." Page 81.

Report of the Board of Trustees of Public Schools of the District of Columbia. Superintendent of Schools, Washington, D. C. "Vacation Schools." Page 49.

1899.

Report of the Commissioners appointed by the Legislature to Investigate and Report upon the Methods of Procedure in This and Other States and Countries in giving Instruction in Manual Training and in the Theory and Art of Agriculture in the Public Schools. L. D. Hart, Commissioner, Madison, Wis.

Chapter 33. "Methods of Instruction in Agriculture," U. S. Bureau of Education. Pamphlet.

Chapter 6. "Education in Central Europe." U. S. Bureau of Education. Pamphlet.

National Cash Register Company. Published in "Outdoor Art and Beautiful House Edition," June, Dayton, Ohio.

"School Gardens," by F. M. Powell, M. D., Glenwood, Ia. Read at the Iowa State Horticultural Society, Des Moines, Ia. Report.

Chapter 34. Extracts from Consular Report, U. S. Bureau of Education. Pamphlet.

Government Reports: Chap. 20. "School Gardens." U. S. Bureau of Education.

1900.

"School Gardens," by U. S. Bureau of Education. Washington, D. C. Bulletin.

"The Physician's Influence in Vacation Schools," by Helen C. Putnam, M. D. Reprinted from the Bulletin of the American Academy of Medicine. Pamphlet.

"Flower Gardens in Public Schools," by Jessie M. Good. Published in "How to Grow Flowers," The Floral Publishing Company, Springfield, Ohio.

Annual Report of the Superintendent of Education of the Public Schools of Nova Scotia, Halifax, Nova Scotia. "School Gardens." Page 27.

1901.

"School Gardens," by Henry Lincoln Clapp, Master George Putnam School, Roxbury, Mass. Reprinted from "Education," May. Also reprinted in pamphlet form.

Chapter 27. Consular Reports, U. S. Bureau of Education. Pamphlet.

Chapter 15. "Public Playgrounds and Vacation Schools," U. S. Bureau of Education. Pamphlet.

"Agriculture and Rural Life in Public Schools," by Willet M. Hays, Professor of Agriculture, University of Minnesota, St. Anthony Park, Minnesota. Bulletin.

Manual of School Law, Nova Scotia. Committee of Public Works and Mines, Halifax, Nova Scotia. Page 66.

"Farming in the City." Philadelphia Vacant Lot Cultivation Association, Philadelphia, Pa. Report.

"Self-Help for Those Who Can't Work in the Usual Business." Philadelphia Vacant Lot Cultivation Association, Philadelphia, Pa. Report.

"Manual Training in Public Schools." Reprinted from a report of the Ontario Educational Association, by Professor James W. Robertson, Ottawa, Canada. Page 15, "The Rural Schools."

"Report, Rules and Regulations adopted by the Park Commission, Dayton, Ohio, also Hints, Suggestions on Street and Decorative Planting, Maintenance of Trees, Shrubs, Lawns, etc."

Report of "Home Gardening Association," Cleveland, Ohio, by E. W. Haines, President.

"Home Gardening Association," Cleveland, Ohio. Report.

1902.

"A Public School Garden," by Henry Lincoln Clapp. Published in "New England Magazine," June.

Report of the School Garden Session of the American Park and Outdoor Art Association, including the following papers: "The School Garden as a Phase of Industrial Work," by W. A. Baldwin, Principal of the State Normal School at Hyannis, Mass. "Boston Sand Gardens," by Miss Ellen M. Tower of Lexington, Mass. "The School Gardens at the School of Horticulture," by H. D. Hemenway, Director

of the School of Horticulture, Hartford, Conn. "The National Cash Register Boys' Gardens," by George A. Townsend, Jr., of Dayton, Ohio. "Some Neglected Millions," by Mr. Knight, New York City. "How We Reach Eighteen Thousand School Children in New York," by Professor John W. Spencer of the Bureau of Nature Study at Cornell, University. "Nature Study for Children," by George F. Powell, Director of the School of Horticulture at Briar Cliff Manor, New York.

"The Hand Book for Planning and Planting Small Home Grounds," by Warren H. Manning. Published by the Stout Manual Training School, Menomonie, Wis.

Annual Distribution for Prizes for Outdoor Art and Landscape Gardening. Published by National Cash Register Company, June, Dayton, Ohio.

"The School Garden." Published by State Normal School, Hyannis, Mass., Hyannis, Mass. Catalogue and Circular.

"Efforts of the Pupils of the Public Schools for Home and Public Improvement," by Carthage, Mo., Public Schools, March 1.

"Two Foreign Schools and Their Suggestions," by Daniel S. Sanford. Published in "New England Magazine," May, 1133 Broadway, N. Y.

Prizes awarded to the Sunday Post-Dispatch Gardeners. Published in "St. Louis Post-Dispatch," Sept. 28, St. Louis, Mo.

"The School Garden." Published in "The Evening Star," Oct. 18, Washington, D. C.

"The Child Farmers of New York," by Louise Seymour Houghton. Published in "Christian Work and Evangelist," Oct. 25, New York City.

"The Country School and the Country Child," by O. J. Kern, County Superintendent of Schools, Rockford, Ill. Published in "School News," September, October, and November, Taylorville and Chicago, Ill.

"School Gardens, Their Devolopment and Functions," by Dick J. Crosby, Office of Experiment Stations, U. S. Department Agriculture. Published in "Outlook," August. With references.

"The Whittier School Garden." Published in "The Southern

Workman," of November. Published by Hampton Inst. Press.

"School Gardens at the School of Horticulture, Hartford, Conn.," by H. D. Hemenway, Director of the School of Horticulture. Read before Boston Meeting of the American Park and Outdoor Art Association. Published in "Park and Cemetery," September, 324 Dearborn St., Chicago, Ill.

"Boys Trained for Citizenship." Published in "The World To-day," October, 153-155 LaSalle St., Chicago, Ill.

"Garden Movement for Schools," by Dick J. Crosby, Office of Experiment Stations, U. S. Department of Agriculture. Published in "The World To-day," October, 153-155 LaSalle St., Chicago, Ill.

"Farming Industry in the United States." Published in "The World To-day," September, 153-155 LaSalle St., Chicago, Ill.

"School Gardening in the Boston Normal School." Published in "Modern Methods," April, New England Publishing Co., Boston and Chicago.

Second Annual Report of the Vacation School Committee, Hartford, Conn.

"A Story of Home Gardens," by Starr Cadwallader, Cleveland, Ohio, Pamphlet.

"The National Cash Register Company." Published in "Social Service" for January. Published at 287 Fourth Avenue, New York City.

DATES NOT ASCERTAINED.

Reports issued by the National Cash Register Company of Dayton, Ohio.

Bulletins Nos. 62 and 71 of the Deparment of Agriculture of State of Pennsylvania.

"Hampton Nature Study Leaflet No. 7." Published by Hampton Institute Press, Hampton, Va.

"Suggestions for Progressive and Correlative Nature Study," by G. M. Carver, Tuskegee Normal and Industrial Institute, Tuskegee, Ala.

Fifty-first Missouri Report of Public Schools, W. F. Carrington, State Superintendent, Jefferson City, Mo. "Nature Study."

Bulletins Nos. 121, 160, 205 of the Horticultural Division of Cornell University, Agriculture Experiment Station, Ithaca, N. Y.

Fifty-second Annual Report of the Public Schools of the City of Worcester, Mass. Superintendent of Schools, Worcester, Mass. "Nature Study and Garden Work." Page 48.

"The Country School and the Country Child." Winnebago County, Ill. Report.

Report of a visit to the Centralized Schools of Ohio, by O. J. Kern, County Superintendent of Schools, Rockford, Winnebago County, Ill.

"How to Beautify Carthage," by L. E. Archias Seed Company, 113-115 Main St., Carthage, Mo. Pamphlet.

Manual of Elementary Course of Study for the Common Schools of Wisconsin. L. D. Harvey, State Superintendent. "Nature Lessons." Page 89.

LIST OF PERSONS ACTIVELY ENGAGED OR INTERESTED IN CHILDREN'S GARDEN WORK.

Charles A. Allen, Secretary The Associated Charities, Dayton, Ohio.

William A. Baldwin, Principal Hyannis State Normal School, Hyannis, Mass.

Robert Barton, Principal Eliot School, 4250 Grove St., St. Louis, Mo.

W. D. Chamberlain, Vice-President The Beaver Soap Company, Dayton, Ohio.

Henry L. Clapp, Principal George Putnam School, Roxbury, Mass.

Dick J. Crosby, Office of Experiment Stations, Washington, D. C.

Mary C. Dickinson, Rhode Island Normal School, Providence, R.I.

The Edgemont Improvement Association, Dayton, Ohio.

L. D. Hart, Commissioner, Madison, Wis.

W. J. Hawkins, Principal of Irving School, 3829 North 25th St., St. Louis, Mo.

Professor Willet M. Hays, University of Minnesota, St. Anthony Park, Minn.

J. E. Higgins, City Supervisor of Agriculture, Honolulu, Hawaii.

Mrs. Horace B. Hooker, 837 St. Paul St., Rochester, N. Y.

Mrs. Alice Hungerford, Old Orchard, Missouri.
Iowa State Horticultural Society, Des Moines, Ia.
Frederic H. Kennard, Landscape Architect, 85 Devonshire St., Boston, Mass.
A. H. Mackay, Superintendent of Education, Halifax, N. S.
Massachusetts Horticultural Society, Boston, Mass.
Mrs. Henry Parsons, 22 West 44th St,, New York City, N. Y.
George P. Phenix, Principal State Normal School, Willimantic, Conn.
Philadelphia Vacant Lot Cultivation Association, Philadelphia, Pa.
George P. Powell, Director School of Practical Agriculture, Briar Cliff, Manor, N. Y.
Dr. H. C. Putnam, 127 Angel St., Providence, R. I.
Charles H. Ramsdell, Menomonie, Wis.
C. G. Rathman, Garfield School, Jefferson Avenue and Wyoming Street, St. Louis, Missouri.
Raymond Riordon, Greenleaf School, Washington, D. C.
Professor James W. Robertson, Commissioner of Agriculture, Ottawa, Canada.
E. G. Routzhn, 1 Sunset Avenue, Dayton, Ohio.
Professor John W. Spencer, Ithaca, N. Y.
W. J. Stevens, Principal Pope School, St. Louis, Mo.
Miss Ellen M. Tower, Lexington, Mass.
George A. Townsend, Jr., National Cash Register Company, Dayton, Ohio.
F. A. Verpeauch, South Manchester, Conn.
Miss Dora Williams, Boston Normal School, Boston, Mass.

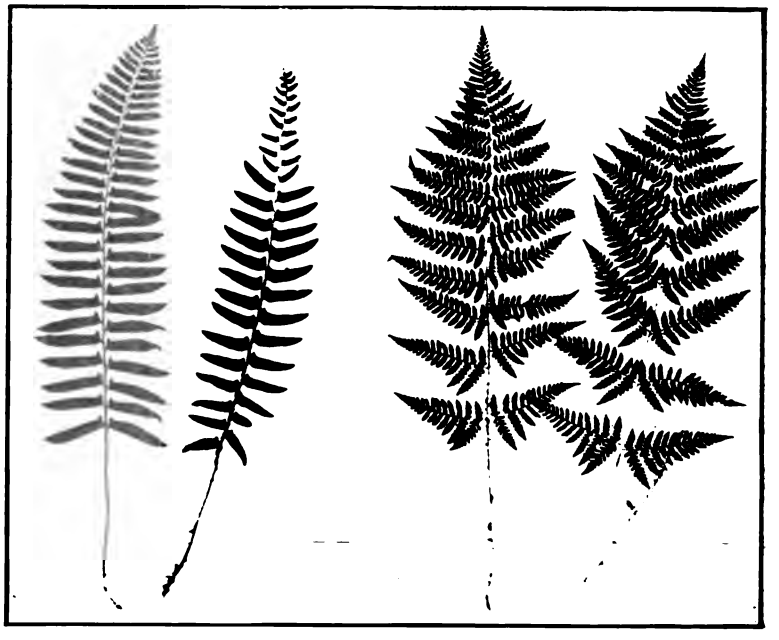
CHILDREN'S HERBARIUMS.

The quality of the children's herbarium work was quite equal to that of previous years. Nothing better than Dorothy Metcalf's and Dorothea Clapp's collection has been seen in our exhibitions. To quote from the "Transcript" notice: "Many of the specimens retain the original colors of the flowers to a degree of artistic as well as of botanical interest, as for example, the sabbatias, wood lilies, irises, sunflowers, roses, mallows, stargrass, cardinal flower and pickerel weed."

Many of the leaf sprays included the fruit of the tree and covered the sheets well. The fern specimens were large and complete as shown by the pictures.

In short, the quality of these collections especially was so good that the Committee decided to purchase quite a number of specimens as the nucleus of a botanical collection to be placed in the herbarium room for ready reference. The need of such a reference herbarium has been felt every year during the preparation of the exhibition and the naming of unnamed specimens.

And the fact that specimens may be considered worthy of being bought and added to the Society's herbarium will, no doubt, have a tendency to improve the quality of the work of every exhibitor; so that it is confidently expected that a useful and beautiful collection will be formed in the course of time.



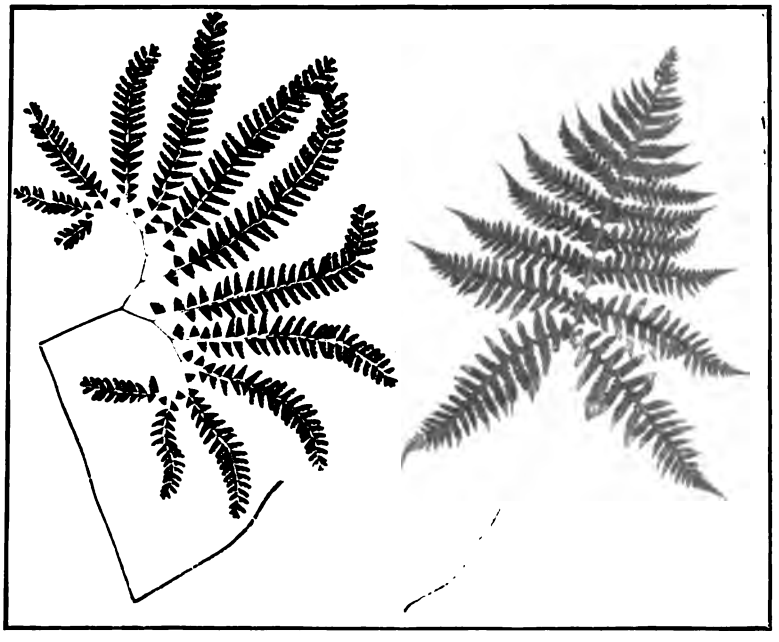
Christmas Fern. Spiny-Shield Fern.

Dorothy Metcalf's Herbarium.

The exhibition of fifty-four mosses correctly named by Christine Dudley Clapp was a new and valuable feature of this year's exhibition. Mosses are difficult things to determine anyway, and when the Society induces a school girl only sixteen years old to

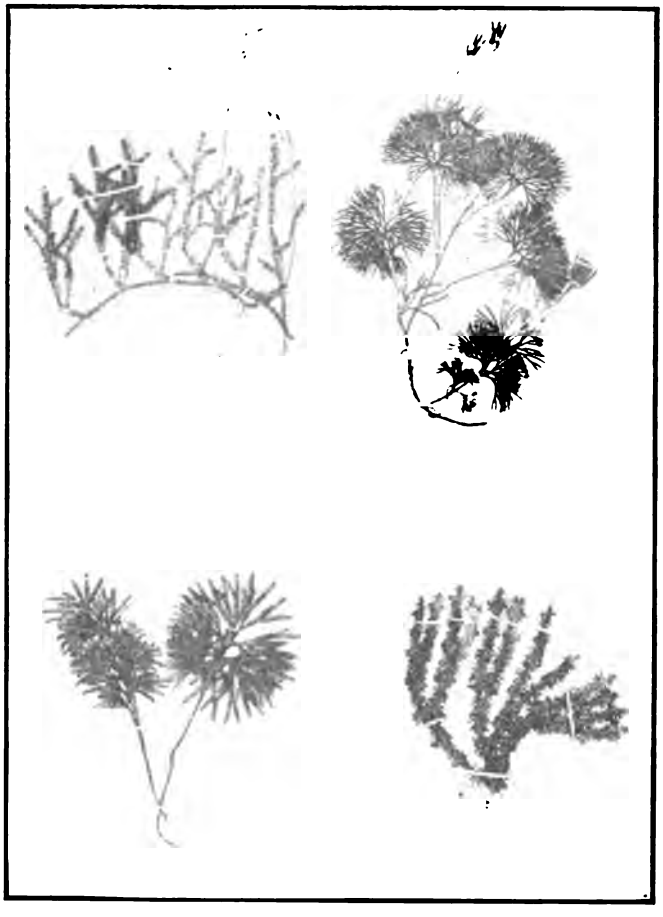
study up so well so difficult a subject as that of mosses and get together so fine a collection, it has done something of which it may well be proud. Such a starter as this frequently goes through the life and sweetens it continually.

The opportunity of putting such a collection on exhibition for hundreds of people to see, botanists included, is a great one, and it is hoped that more will take advantage of it, until mosses become as well known as flowering plants.



Maidenhair Fern. Phegopteris hexagonoptera.
Dorothy Metcalf's Herbarium.

Two members of this Society who have long been interested in mosses and have done very careful work in naming and exhibiting them examined this collection with evident pleasure, and disabilities of long continuance were forgotten in the added pleasure of the hour. This is surely one instance of sweetening the life to which reference has been made. And may there be many more!



Lycopodium clavatum. Lycopodium complanatum.
Lycopodium dendroideum. Lycopodium lucidulum.
Olive L. French's Herbarium.

Then there was another unusual exhibit, Miss Olive L. French's collection of lycopodiums, of which four are illustrated. This bringing together the different species of a genus for comparison is of great educational value. Agassiz declared there was only one proper method of study—the "*compariteef*"—and Miss Olive L. French has it.

Grass Pink. Large Blue Flag.
Linden. White Oak.
Dorothy Metcalf's Herbarium.

As noted in previous years, the family interest was shown again this year. The two Clapp girls exhibited specimens, and their small brother, Dudley, entered for the first time. There were three Swain boys, two Morss boys and two French girls among the exhibitors.

John Murdoch, Jr., now in Harvard College, exhibited over eighty new plants this year, although his contributions in previous years all told amounted to nearly six hundred different species.

Although only eighteen years old he is already a good botanist, thanks to the opportunities and encouragements offered here. On account of his botanical knowledge he graduated from the Roxbury Latin School with extra high marks, the writer being present on the occasion.

LEARNING TO INVESTIGATE.

The children of the Ira Allen Primary School, Boston, have been induced to find every different species of plant that grows in the adjoining field, and it is expected that the results of similar work next year will appear among the children's herbariums exhibited in our hall.

That is a phase of plant work which we have not noticed before among small children; and we shall be glad to encourage the thorough investigation of a certain area, no matter how limited, which was Darwin's characteristic way of working.

A GERMAN SCHOOL GARDEN.

A bit of the rock garden. Gera. Germany.

In Germany instruction on wild flowers and their cultivation is given quite as extensively as that on the kitchen garden. The botanic side of plants is considered quite as educative as the purely economic side.

The conditions for growing wild plants are much more varied than those for growing cultivated plants. There are wild plants that grow on Alpine heights, in watery marshes, deep woods, sand, cracks of rocks, and on other plants. The diverse conditions under which they grow furnishes a wide field of observation and learning.

A typical garden in furnishing varied conditions for growing over two thousand species of wild plants is located in Gera, Germany. Here all the children of the city come to observe and to receive instruction. It contains a spring from which flows a perennial stream.

The rock garden situated on an eminence is represented here by means of a reproduction from a photograph which I took in 1899. The area of the garden is a little less than an acre. A gardener and a director are regularly employed by the city to take care of it.

HORTICULTURE WITH NATIVE PLANTS.

Such gardens in Europe are very practical affairs. Our colleges have taught botany for many years, but not in the practical German method. However, if colleges all over the world have considered it of sufficient educational value to be entitled to a place in their curricula, there must certainly be such educational value in it as to command our respect and encouragement.

It is well to induce children to cultivate our native, hardy perennials as Mr. J. W. Manning, Rea Brothers, Mr. Horsford, Mrs. Wolcott and others have done. If they learn to love our native plants through their herbarium work no doubt some of them will desire to have them growing in their own gardens where they can see them easily and often.

Our public parks more and more are being adorned with our native plants and shrubs. One has only to walk through the Back Bay Fens, The Fenway, Franklin Park or the Arnold Arboretum to be convinced of that fact.

A large portion of our decorative plants grow wild somewhere,

and that fact is nothing against them. The Botanic Garden at Cambridge is a most lovely spot; and our native plants make it so. Just as fine are the botanic gardens in Europe which I have visited. They furnish the people with flower shows every day from early spring to late fall.

I have cultivated hardy perennials including asters, golden-rods, violets, ferns, wild bean, heleniums and others, far too numerous to mention, for more then a score of years, and they improve greatly under cultivation. I am sure that is horticulture. A great many men and women have done the same, and we desire the number should be increased, that their happiness may be made more certain.

Some seem to forget that happiness may be found in a garden regardless of the size of the flowers or their market value. To many the twin-flower is as pleasing as the rose, the mayflower as the dahlia, the violet as the chrysanthemum.

PRIZES AND GRATUITIES AWARDED FOR SCHOOL GARDENS AND CHILDREN'S HERBARIUMS.

SCHOOL GARDENS.

George Putnam School, Roxbury, first prize	$15 00

CHILDREN'S HERBARIUMS, NOVEMBER 28 AND 29, 1902.

FLOWERING PLANTS.

Gratuities:—

Dorothy Metcalf, for eighty-five additions to one hundred . .	3 40
John Murdoch, Jr., for sixty-three additions to four hundred and twenty-four	2 75
Marion L. French, for thirty-six additions to one hundred and forty-five	96
Robert D. Morss, for thirty additions to one hundred and seventy-five	84
Edward L. Morss, for twenty-five additions to one hundred and twenty-five	66
Olive L. French, for eighteen additions to two hundred and ninety-two	42

Donald N. Swain, for thirteen additions to twenty-five	$ 35
Winthrop C. Swain, for three additions to eighty-five	04

FERNS AND FERN ALLIES.

Gratuities:—

Dorothy Metcalf, for thirty-one ferns and seven fern allies	5 70
Dudley Clapp, for thirty-one ferns	3 72
Sara E. Snell, for twenty-seven ferns	3 24
Olive L. French, for ten ferns and eight fern allies	2 34
Bessie R. Parmenter, for twelve ferns	1 20

SEDGES.

Gratuities:—

John Murdoch, Jr., for fourteen additions to sixty-eight	1 68
Winthrop C. Swain, for seven specimens	40

GRASSES.

Gratuities:—

John Murdoch, Jr., for twelve additions to forty-eight	1 20
Olive L. French, for four additions to fifty	50

SPRAYS OF LEAVES.

Gratuities:—

Dorothea Clapp, for fifty-one additions to thirty	5 10
Charles D. Swain, for thirteen specimens	91

MOSSES.

Gratuity:—

Christine Dudley Clapp, for fifty-four specimens	5 00
Total for Gardens and Herbariums	$40 41

The amount of money appropriated by the Society for the use of the Committee was:

For Prizes and Gratuities	$125 00	
For Current Expenses	75 00	$200 00
The Committee has expended		59 02
Balance unexpended		$140 98

HENRY L. CLAPP, *Chairman*, Roxbury,
MISS KATHARINE W. HUSTON, Roxbury,
WILLIAM P. RICH, Chelsea,
CHARLES W. JENKS, Bedford,
MRS. H. L. T. WOLCOTT, Dedham,
HENRY S. ADAMS, Boston,
W. E. C. RICH, *Secretary*,
99 Moreland Street, Roxbury, Mass.

Committee on School Gardens and Children's Herbariums.

REPORT

OF THE

COMMITTEE ON NATIVE PLANTS

FOR THE YEAR 1902.

By CHARLES W. JENKS, CHAIRMAN.

Collections of native plants were exhibited on the five days arranged in the schedule and all were marked by good displays, in fine condition, and well arranged. The exhibits were often so nearly equal in excellence that it was not easy to call one better than another, and your committee frequently found it difficult to determine the order of the awards. The increase from three to five prizes has worked well, and the limiting of the number of specimens of each species to three has, perhaps, lessened the effect as a display, but has in no way interfered with the botanical interest of the exhibits, and has shown the desire of the committee, as far as in its power, to discourage the unnecessary destruction of our native plants.

On May 10 were shown the usual early spring flowers.

On June 6 to 8, among others, were *Cypripedium spectabile*, *C. pubescens*, *C. parviflora*, *C. acaule*, *Liparis liliifolia*, *Arethusa bulbosa*, *Pogonia verticillata*, *Conopholis Americana*, and *Botrychium simplex*.

On July 12 were noted with interest, *Lysimachia stricta* var. *producta*, *L. vulgaris*, *L. punctata*, *Gnaphalium purpureum*, *Oenothera biennis* var. *cruciata*, *Rhododendron maximum*, and *Lobelia Dortmanna*.

On July 19, for the prizes for native ferns, three collections were offered, and all were representatives of our native species and creditable to the exhibitors. While there were no rare specimens there were many of interest, among which may be mentioned the following: Mrs. Clark had an unusual form of *Asplenium Filix-foemina* with finely laciniate fronds somewhat resembling some of the English cut varieties; fine specimens of *Phegopteris hexagonoptera*, cultivated in garden; *Ophioglossum vulgatum*, called rare, but better described as common but rarely observed. Mr. C. C. Kingman exhibited four *Botrychiums*, *matricariæfolium*, *ternatum*, *ternatum* var. *dissectum*, and *Virginianum;* the form of *Onoclea* called *obtusilobata;* some peculiar forms of *Asplenium Filix-foemina;* and *Asplenium angustifolium* cultivated in garden. The Misses Doran had a collection neatly arranged and in fine condition in which was *Aspidium Goldianum* cultivated in garden, and a form which came close to *Aspidium cristatum* × *marginale*. Mr. George E. Davenport kindly assisted the committee and his thorough knowledge of the species was of great assistance to them.

There were no exhibits for the prizes offered for cultivated native plants.

On August 2 the Misses Robbins of Cambridge had an interesting exhibit of our common roadside plants and weeds. In the other collections were *Habenaria blephariglottis*, *H. orbiculata*, *H. tridentata*, *H. psycodes*, *H. lacera*, *H. ciliaris*, *Microstylis ophioglossoides*, *Monarda didyma*, *M. clinopodia*, *M. fistulosa*, var. *rubra*, *Utricularia inflata*, *U. purpurea*, *U. vulgaris*, *U. cornuta*, and *U. gibba*.

On September 11, the last prize day of the season, there were brought a large collection of asters and goldenrods, and some excellent specimens of native plant fruits of which Miss Mann exhibited twelve species.

The committee are well pleased with the exhibits offered and hope next season that there will be more plants shown on days when no prizes are offered, as was the custom formerly. These displays of native plants are a marked feature of our exhibitions and the interest felt in them is shown by the large number of per-

sons, both old and young, who gather around them to recognize an old acquaintance or to obtain the name of some new friend.

The committee, while not desiring to enter into the question of nomenclature, have felt that they should have some standard and for the present, as their rules for 1903 show, have decided on Gray's Manual.

PRIZES AWARDED FOR NATIVE PLANTS.

1902.

MAY 10.

NATIVE PLANTS.—Collection of thirty bottles of named species and varieties, one bottle of each:
1st, Mrs. Arthur Clark, $5; 2d, Mrs. W. S. Eager, $4; 3d, Misses E. A. and M. S. Doran, $3.

JUNE 7. (*Changed from June 6, 7 and 8.*)

NATIVE PLANTS.—Collection of thirty bottles of named species and varieties, one bottle of each:
1st, Mrs. W. S. Eager, $5; 2d, Mrs. Arthur Clark, $4; 3d, Miss R. L. Mann, $3.

JULY 12.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:
1st, Mrs. Arthur Clark, $5; 2d, Misses E. A. and M. S. Doran, $4; 3d, Edward S. Colburn, $3; 4th, Miss R. L. Mann, $2.

JULY 19.

NATIVE FERNS. Collection of named species and varieties:
1st, Mrs. Arthur Clark, $6; 2d, C. C. Kingman, $5; 3d, Misses E. A. and M. S. Doran, $4.

AUGUST 2.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:
1st, Mrs. Arthur Clark, $5; 2d, Mrs. W. S. Eager, $4; 3d, Misses E. A. and M. S. Doran, $3; 4th, Miss R. L. Mann, $2; 5th, Edward S. Colburn, $1.

SEPTEMBER 11, 12, 13 AND 14.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:

1st, Mrs. Arthur Clark, $5; 2d, Edward S. Colburn, $4; 3d, Mrs. W. S. Eager, $3; 4th, Miss R. L. Mann, $2; 5th, Misses E. A. and M. S. Doran, $1.

Appleton Silver Medal awarded to Mrs. Arthur Clark for the greatest number of first prizes for Native Plants.

Appleton Bronze Medal awarded to Mrs. W. S. Eager for the next greatest number of first prizes for Native Plants.

Amount appropriated for the use of the Committee		$175.00
Amount of Prizes	$83.00	
Cost of Medals	10.52	93.52
Balance unexpended		$81.48

CHARLES W. JENKS,
WILLIAM P. RICH,
MISS MARY RODMAN,
Committee on Native Plants.

REPORT

OF THE

COMMITTEE ON FORESTRY AND ROADSIDE IMPROVEMENT

FOR THE YEAR 1902.

By JAMES STURGIS PRAY, SECRETARY.

To the President and Members of the Massachusetts Horticultural Society:—

The Committee on Forestry and Roadside Improvement respectfully report:

The principal work of the committee during the past year has been the carrying on of that referred to in our previous reports; namely,—the collecting, collating and tabulating of information regarding the distribution and condition of our roadside trees throughout the Commonwealth, with a view to publishing a report of these conditions, coupled with recommendations to the tree wardens and others having to do with the preservation and increase of the arboreal beauty of our roadsides. To this end we have again sent out copies of our original roadside circular, containing the series of specific inquiries, to all the tree wardens in the towns, and to the city foresters and others in the cities; and in this way have added substantially to the mass of statistical data already in hand. Meanwhile the arrangement of one part of this information has been finished, being divided under such heads as,—Record of replies; Work done; Condition of trees; Soils; Diseases and pests; Tree-guards; Effects of electric wires, gas,

and pavements; Placards; Noteworthy individual trees; Real estate values; Arbor Day; Work in the schools; Town by-laws; Inquiries; etc. The tabulation of the other part of our accumulated information is rapidly nearing completion, as is also the mapping of the latter in a way to indicate graphically the distribution of species. It was in connection with this latter work that reference was made in a previous report to the relation which the work of this committee had to that of the Division of Biological Survey of the United States Department of Agriculture. Although the Secretary of the committee, who has been carrying on this work, is no longer able to give to it so much time as heretofore, he hopes to be able to submit, in behalf of the committee, to the Society before spring, the long promised report on all the material, in order that it may be printed, if the Society shall see fit, in season for circulation to the tree wardens, members of the Society, and others, early in April.

Whatever value may come out of this report, the more important work for the committee has been the correspondence with the tree wardens and others, and the helping them constantly with information and advice; and the committee believes that this good work should not be allowed to lapse through any inadequacy of appropriations.

In this connection, it may be well to state, in view of possible misunderstanding, that our committee is in closest sympathetic relation with the Massachusetts Forestry Association. On the one hand, so far as it is plowing the same field, the two are coöperating, and there is more than ample field for both. On the other hand, a large share of the work of this committee is entirely distinct from and unlike anything that the Massachusetts Forestry Association has as yet undertaken. As an instance of the coöperation above referred to, and a proof of the value of the existence of a Committee on Forestry, separate from the Massachusetts Forestry Association, we may refer to the several occasions when a cause espoused in common by the two, has been supported at the State House by the representatives of both; a bill originating with the Massachusetts Forestry Association receiving proportionately more consideration by having the united support of that Association, this Society (through its committee), the Board of

Agriculture, and the Appalachian Mountain Club. It is often true, as has been conspicuously the case in the relations of our committee, that a number of independent but closely allied and coöperating organizations can, working together, wield a larger power than if united under one government.

In conclusion, we have only further to report at this time, and as additional instances of useful coöperation, that during the past year we have continued to use such opportunities as have offered for the distribution of the circulars of the Society for the Protection of Native Plants, and the American Park and Outdoor Art Association; and have taken part in the reception and entertainment of the latter Association on the occasion of its annual convention held last August in Boston, when the hospitality of our Society was so freely shown it.

Respectfully submitted for the Committee,

HARVEY N. SHEPARD, *Chairman*,
JAMES STURGIS PRAY, *Secretary*,
NATHANIEL S. SHALER,
HENRY S. HUNNEWELL,
J. WOODWARD MANNING,
Committee on Forestry and Roadside Improvement.

REPORT

OF THE

COMMITTEE OF ARRANGEMENTS

FOR THE YEAR 1902.

By JOSEPH H. WOODFORD, CHAIRMAN.

As the year draws to a close we can look back with considerable satisfaction at the result of our endeavors to make the exhibitions attractive and fully appreciated by the multitudes of people who have attended them.

The Schedule of Prizes called for about the same number of exhibitions as are usually held during the year and some of them have taxed the halls to their utmost capacity to contain them; and in some instances considerable ingenuity had to be resorted to to accommodate the great number of exhibitors.

The arrangements have been carefully planned and so well carried out that everything done by the committee has met with the approval of the exhibitors and has redounded to the credit of the Society.

We are much pleased with the copious notices of our exhibitions in the newspapers and now wish to thank the reporters for taking so much pains for the benefit of our Society. The appropriation placed to the credit of this committee for extraordinary expenses has been expended judiciously and for the best interests of our exhibitions.

The amounts received for admission fees to the three Shows, for which an entrance fee was charged, were as follows:

Spring Show, March	$771.00
Plant and Flower Show, September . . .	826.25
Chrysanthemum Show, November . . .	1,092.50
	$2,689.75

all of which is in the hands of the Treasurer.

Respectfully submitted,

JOSEPH H. WOODFORD,
ARTHUR H. FEWKES,
J. WOODWARD MANNING,
E. W. WOOD,
WARREN H. HEUSTIS,
PATRICK NORTON,
ROBERT FARQUHAR,

Committee of Arrangements.

REPORT OF DELEGATE

TO THE

STATE BOARD OF AGRICULTURE

FOR THE YEAR 1902.

When one visits the Hatch Experiment Station at Amherst, he really wonders if the farmers and gardeners of the Commonwealth realize the importance of the work carried on in their interests. There are trained professors whose daily business is special investigation in the various departments of agriculture and horticulture; in the latter we are, perhaps, more especially interested. The work is done on a scale of sufficient magnitude to present the subject in all practical ways, and the products are large enough to insure of keeping in prompt touch with the market quotations.

There the cultivator finds the meat of the nut cracked for him; there he can find the best apples, pears, peaches, plums, and small fruits of all kinds. The directing professor can give lists of the most profitable varieties for the market or for family use.

Last summer the Trustees of the College made a change in the horticultural professorship, Prof. F. A. Waugh taking the place of Prof. Maynard. We remember the latter pleasantly in connection with several lectures with which he has favored this Society, as well as his exhibitions of fruits in illustration of some of his experiments.

The Hatch Experiment Station is well worth what it costs the state and the nation for its support.

This has been a year of commemoration to the State Board of Agriculture, which was established in 1852, and consequently has now attained its semi-centennial, which was celebrated by a meeting in our Halls on July 22. Invitations were extended to all past and present members of the Board, also to the Governors of the New England States, and to the Secretary of the Department of Agriculture at Washington.

The venerable Ex-Governor Boutwell, who was in office at the time of the establishment of the Board, and who was one of its most cordial promotors, was present and addressed the meeting.

His Honor Lieut.-Governor Bates spoke for the Commonwealth, and a representative from the Department of Agriculture also spoke.

Dr. Goodell, President of the Agricultural College at Amherst, gave an exceedingly interesting historical address, and President O. B. Hadwen, of this Society, entertained the meeting with personal reminiscences of his membership in the Board.

The exercises closed with a collation in the smaller hall at which a large number participated.

WILLIAM H. SPOONER,
Delegate.

December 1, 1902.

REPORT OF THE INSPECTOR

TO THE

STATE BOARD OF AGRICULTURE

FOR THE YEAR 1902.

To the State Board of Agriculture,

GENTLEMEN :—The duty you have assigned to me of inspection of exhibitions of the Massachusetts Horticultural Society is agreeable, and easy by comparison. There is indeed no comparison to make, as the high position of that Society in consequence of position in the state, and, indeed, in this nation, and beyond, is so elevated that what it has done, and is doing, can only be much praised. Comparisons with this Society can be best and only, perhaps, made with itself. Its management is acting under its existing rules of government, and the responsibility for keeping these rules in the most advanced condition has been placed by the state upon its members. The state gave it a Constitution in the Acts of Incorporation passed in the year 1829, and the power to make by-laws rests with the Society. It has done a noble work in the promotion of Massachusetts Horticulture; and it must succeed, and advance in wealth and horticultural promotion, so long as our citizens of wealth, and practical knowledge in matters given to its care, continue to have a united confidence that those sterling ideas which its founders held are unselfishly perpetuated.

We can safely record the facts that its several exhibitions within its new Halls, with its fine library accommodations adjoining, have deserved high commendation during the year.

FRANCIS H. APPLETON,

Inspector.

REPORT

OF THE

COMMITTEE ON LECTURES AND PUBLICATION

FOR THE YEAR 1902.

By AARON LOW, CHAIRMAN.

The Committee on Lectures and Publication presents the following summary of its work for 1902:

A course of nine lectures has been delivered, as follows:

January 11. The Brown-Tail Moth in Massachusetts. By A. H. Kirkland, M. S.

January 18. Horticultural Possibilities for New England Farms. By Prof. F. Wm. Rane.

January 25. The Business End of Horticulture. By Patrick O'Mara.

February 8. The Methods and Results of Soil Sterilization. By Prof. G. E. Stone.

February 15. Fungous Diseases of Fruits. By Prof. M. B. Waite.

March 8. The Influence of American Expositions on the Out-Door Arts. By Warren H. Manning.

March 15. The Evolution of Vegetable Culture during the last Forty Years. By Warren W. Rawson.

March 22. Birds and Insects in their Relation to Agriculture. By E. H. Forbush.

March 29. Some Famous Gardens of the World. By Miss Helena T. Goessmann.

The Schedule of Prizes for 1902 was issued January 17.

The Transactions for 1901, Part I, was issued July 1, and that for 1901, Part II, on October 27.

Part III of the Transactions for 1897 containing the accessions to the library for that year is now being printed.

AARON LOW,
JAMES H. BOWDITCH,
E. W. WOOD,
Committee.

REPORT

OF THE

COMMITTEE ON THE LIBRARY

FOR THE YEAR 1902.

By WALTER S. PARKER, CHAIRMAN.

The Library Committee, in accordance with custom and the rules of the Society, respectfully submits the following report:

The committee desires to call the attention of every member of the Society to the beautiful and spacious rooms in which the library is now located. In many particulars they are all that could be desired, and especially is this true of the large, main hall. The light is excellent, the floor space ample, and the general architectural effect is very pleasing. It is a very fine room, withal, for a consulting library, and it seems unnecessary to add that it contains many rare and valuable books.

It is absolutely necessary, however, that some alterations be made in the large room, in order that it may meet the ends for which all libraries are instituted; namely,—first, the safe storage of books; second, a positive encouragement to the readers for the continued use of the books. Books are made for the purpose of being read and consulted, and every encouragement should be given to the patrons of the library. It is unfortunate that the shelves are all of uniform width (eight inches), and, in order to properly care for the large books and folios, it will be necessary to make some alterations.

Two methods have been considered by the Library Committee, either one of which will increase the efficiency of the library, and

make it of greater use to the members of the Society. In one plan it is proposed to enlarge the lower shelves by building out the cases, thus making a greater depth of shelf for the accommodation of the large books and folios. The architect has expressed the opinion that this can be done without injuring the present pleasing architectural effect. The Library Committee, after carefully considering the matter, is inclined to favor this plan.

The other plan mentioned, and considered somewhat, is to keep the cases and shelves as they are at present, and to construct low, double-faced cases, to be placed in the centre of each alcove, thus making them serve the double purpose of bookcase and table. This latter plan, we understand, was the original idea suggested when the arrangement of the library was first under consideration. It is in some ways better than the first plan mentioned, and, if adopted, will not change the present architectural effect of the room.

Your committee is emphatically of the opinion that no change should be made in the library without first consulting the architect, and getting plans which will harmonize with the general proportion of the present interior furnishings of the room. We earnestly hope that the financial condition of the Society will warrant the Executive Committee in granting such sums as will enable these changes to be made.

We are sorry to record the resignation of the former chairman of the Library Committee, Mr. William E. Endicott, a gentleman who, by education and natural endowments, was especially adapted to the work of the Society. He was widely read in many departments of horticulture and was practically engaged in the culture of various plants and shrubs on his home place, thereby making his judgment especially valuable in the selection of books for the library. He has served for twenty-three years as chairman of this committee and has done most excellent work for the Society, and it is with deep regret that we record his resignation.

We add herewith a list of the books worthy of special mention, received during the past year.

The seventh edition of Miller's Gardeners Dictionary; a 1517 edition of the Ortus Sanitatis; the first edition, 1664, of Evelyn's Sylva; Vol. II of the Botany of Captain Cook's Voyage; Delile's Flore D'Égypte (the botanical portion of Bonaparte's Égypte); Sanders' Orchid Guide (a useful reference book); American Gardens, by Lowell; Henderson's Picturesque Gardens; Gifford's Practical Forestry; Schwarz's Forest Trees and Forest Scenery; Charles Eliot, Landscape Gardener; Campbell's University Textbook of Botany; Britton's Manual of the Flora of the Northern States and Canada; Earle's Sun-dials and Roses of Yesterday.

Some of the books of a popular nature are Annie Oakes Huntington's Studies of Trees in Winter; the Handbook of the Trees of New England, by Dame and Brooks; a new edition of Frances Theodora Parsons' According to Season; F. Schuyler Mathews' Field Book of American Wild Flowers; Alice Lounsberry's Southern Wild Flowers and Trees; Cook's Trees and Shrubs for English Gardens; Jekyll and Mawley's Roses for English Gardens; Boyle's Woodlands Orchids; and Grout's Mosses with a Hand-lens.

We are glad to note the completion, after many years, of Pierre's Flore forestière de la Cochinchine, and Cesati, Passerini and Gibelli's Compendio della Flora Italiana. The concluding volumes of Professor Sargent's great work, The Silva of North America, have been received and also the fourth and last volume of Professor Bailey's Cyclopedia of American Horticulture. Besides these we have received continuations of Braithwaite's British Moss-Flora; Cogniaux and Goossen's Dictionnaire Iconographique des Orchidées; Collins, Holden and Setchell's Phycotheca Boreali-Americana; Flora Batava; Reichenbach's Icones Florae Germanicae et Helveticae; the second edition of Rabenhorst's Kryptogamen-Flora von Deutschland, Oesterreich und der Schweiz; Urban's Symbolae Antillanae; the Catalogue of Welwitsch's African Plants; Thiselton-Dyer's Flora of Tropical Africa; Hooker's Icones Plantarum; Bubani's Flora Pyrenaea; Triggs' Formal Gardens in England and Scotland; and Annals of the Royal Botanic Garden, Calcutta.

Monographia Aquifoliacearum, Part I, by Loesener; Monographia Loasacearum, by Urban; and Studien über die Gattung Platanus have been presented by the Kaiserlich-Leopoldinisch-Carolinische Deutsche Akademie der Naturforscher, Halle.

WALTER S. PARKER,
GEORGE E. DAVENPORT,
CHARLES W. SWAN,
CHARLES W. JENKS,
T. OTIS FULLER,
Library Committee.

REPORT

OF THE

SECRETARY AND LIBRARIAN

FOR THE YEAR 1902.

The hand that for twenty-five consecutive years has prepared the Annual Report of the Secretary and Librarian has dropped its busy pen and the active brain that guided it has ceased its labor. Suddenly upon the morning of the seventeenth of February of the present year, Robert Manning was gathered into the harvest of the eternal years. In another place will be recorded a fitting tribute to his memory and a biographical sketch of his long and fruitful life.

Upon the death of Mr. Manning the duties of these offices were performed under the direction of Mr. Nathaniel T. Kidder, of the Executive Committee, until July first, at which time the present Secretary and Librarian was appointed.

Notwithstanding the vicissitudes of the year, work on the publications of the Society has been steadily maintained, with the result that Part I of the Transactions for 1901, which had been edited by Mr. Manning, has been issued, as well as Part II of the same year, mostly prepared by Miss Charlotte M. Endicott and Miss Mary C. Hewett, the efficient assistants in the library. Part I of 1902 is now being printed and will be ready for distribution at an early date.

Work on the long delayed Part III of the Transactions, comprising the accessions to the library, has been renewed and an effort will be made to bring these issues up to date as quickly as possible. Part III of 1897 is now in press. It is hoped in the

near future to incorporate the accessions with the current volumes of the Transactions, thereby discontinuing the third part, and rendering more promptly available the resources of the library.

While the valuable library of the Society is now handsomely established in its new and spacious halls, there remain some changes to be made in order that its usefulness may be increased and its accessibility rendered more convenient. Happily the problem of lack of shelf room which was for so many years the theme of discussion in this annual report has been now solved, but a new problem has arisen to take its place.

The work of final arrangement, the numbering of the shelves, and the cataloguing of the books have been greatly delayed by reason of the lack of proper shelving and the consequent uncertainty as to the disposition of the folios and quartos which constitute a large proportion of our volumes.

Fortunately, however, this problem is one of easier solution and a plan has already been adopted by the Library Committee by which this defect may be remedied. It is to be hoped that through the liberality of the Society the necessary means may be soon furnished whereby this improvement may be made and the library brought into a condition which its importance demands. The Librarian cannot too strongly urge the necessity of an early carrying into effect of this recommendation.

Through a special appropriation by the Society we have been enabled to add two new and improved card-catalogue cabinets, and a gift of $123.61 from the Building Committee will be expended for similar purposes, thereby adding to the convenience of all frequenters of the library.

Current standard publications of horticultural and botanical interest have been added to the library as promptly as possible and a partial list of some of the more noteworthy ones is appended to the report of the Library Committee. A collection of agricultural and horticultural books from the library of the late James F. C. Hyde has been presented by Mrs. Hyde and contains many desirable additions to the library.

While not as many books have been taken from the library as in some previous years, its use for the purposes of reference and special study appears to have increased, and inquiries by mail from correspondents throughout the country on questions and subjects of horticultural and botanical interest are frequently received. The Secretary and Librarian and his assistants are always ready to render the resources of the library as helpful as possible to all interested inquirers.

The list of horticultural, agricultural and botanical journals of the world's best publications has been fully maintained and with all these valuable advantages and with the beautiful, well-lighted and spacious library room it would seem that the library should be of even greater service in the future than it has been in the past.

WILLIAM P. RICH,
Secretary and Librarian.

TREASURER'S REPORT

FOR THE YEAR 1902.

MASSACHUSETTS HORTICULTURAL SOCIETY, *in account current with* CHARLES E. RICHARDSON, *December 31st, 1902.*

DR.

To amount paid on account of New Building . . .			$175 00
" " " for Furniture and Exhibition Ware . .			93 39
" " " " Library, appropriated by Society	$400 00		
" " " from income of J. S. Farlow Fund	127 49		
" " " from income of J. D. Williams French Fund . . .	200 75		
			728 24
" " " Interest on funds for Prizes, credited opposite			2,051 79
" " " L. J. Hunt, guardian			6,585 81
" " " for Heating	$1,651 68		
" " " " Lighting	699 96		
" " " " Water Rates	105 00		
" " " " Labor	2,627 48		
" " " " Stationery, Printing and Postage	2,042 46		
" " " " Insurance	3,476 60		
" " " " Incidentals	1,017 75		
" " " " Repairs	201 55		
" " " " Committee of Arrangements,	300 00		
" " " " " on School Gardens and Children's Herbariums	18 61		
" " " " Committee on Lectures and Publications . . .	229 00		
Amounts carried forward . . .		$12,370 09	$9,634 23

Amounts brought forward	$12,370 09	$9,634 23
To amount paid for Committee on Forestry and Roadside Improvement .	$147 38	
" " " for Salaries of Treasurer, Secretary and Assistants . .	4,300 00	
" " " " Salaries of Committees .	1,043 00	
" " " " Tax on South Boston Property	139 12	
" " " " Electric Power . . .	348 15	
" " " " ⅔ Share of General Electric Stock	122 00	
" " " Alice M. Hobson, services in Library	75 01	
" " " for Legal Services . . .	100 00	
" " " American Park and Out-Door Art Association . .	100 00	
		18,744 75
" " " for Prizes awarded in 1901, viz.:		
H. H. Hunnewell, Triennial Prize . .	$160 00	
Prizes for Plants	1,287 50	
" " Flowers	1,039 02	
" " Fruit	653 00	
" " Vegetables	564 65	
" " Gardens and Greenhouses . .	415 00	
" " School Gardens and Children's Herbariums	83 75	
		4,202 92
		$32,581 90
Balance December 31, 1902		17,648 55
		$50,230 45

CR

By Balance of account rendered December 31, 1901 . .		$26,481 72
" Received from Building in 1902, use of Halls,	$3,905 00	
" " " Annual Exhibitions, Gross . . . $2,689 75 Less Expenses, 1,700 65	989 10	
" " " Admissions and Assessments .	1,498 00	
" " " Mount Auburn Cemetery . .	3,307 90	
" " " State Bounty	600 00	
Amounts carried forward	$10,300 00	$26,481 72

Amounts brought forward		$10,300 00	$26,481 72
By Received from Sale of Transactions . .		3 50	
" " " Interest on Bonds .	$9,836 67		
" " " " " Stock .	610 00		
" " " " " Deposits in Bank . .	444 70		
	$10,891 37		
Less paid L. J. Hunt, Guardian,	448 93		
		10,442 44	
By Received from Estate of Benjamin H. Pierce, for Fund		800 00	
" " " Sale of ⅓ Share General Electric Stock		101 00	
" " " Edward Hatch, for Special Prize		50 00	
" Interest credited following Funds charged opposite:			
Samuel Appleton Fund .	$50 00		
John A. Lowell " .	50 00		
Theodore Lyman " .	550 00		
Josiah Bradlee " .	50 00		
Benjamin V. French " .	25 00		
H. H. Hunnewell " .	200 00		
W. J. Walker " .	117 72		
Levi Whitcomb " .	25 00		
Benjamin B. Davis " .	25 00		
Marshall P. Wilder " .	50 00		
John Lewis Russell " .	50 00		
Francis Brown Hayes " .	500 00		
Henry A. Gane " .	50 00		
John S. Farlow " .	100 00		
J. D. Williams French " .	200 00		
Benjamin H. Pierce " .	9 07		
		2,051 79	
			23,748 73
			$50,230 45

CHAS. E. RICHARDSON,
Treasurer.

Approved:

WALTER HUNNEWELL,
ARTHUR F. ESTABROOK,
O. B. HADWEN,
} *Finance Committee.*

AUDITOR'S CERTIFICATE.

28 State Street, Boston, March 3d, 1903.

To the Finance Committee of the
Massachusetts Horticultural Society.

Gentlemen:—In compliance with your request I made a thorough audit of the books and general accounting affairs of the Massachusetts Horticultural Society for the year which ended with the 31st day of December, 1902, and herewith hand you my report of the same.

Report.

I added the ledger, journal and cash book and the small books tributary to the cash book and saw that all balances were correctly carried forward. I examined and checked the vouchers representing the disbursements during the year and found the amount of cash required by the cash book upon the first day of January, 1903, to have been on hand, and also examined the securities of the Society in the custody of the Treasurer and found that they were in all instances in accordance with the requirements of the record. I traced all postings from the journal and cash book into the ledger and proved the correctness of the balance sheet taken from the ledger as of the 31st day of December, 1902, which is a true statement of the financial condition of the Society upon said date, to the best of my knowledge and belief.

In short, I satisfied myself that the work in connection with the accounting affairs of the Society was being conscientiously and honestly performed, and that there was every evidence of faithfulness upon the part of the Treasurer.

Yours very respectfully,

ANDREW STEWART,
Examiner of Accounts.

ASSETS AND LIABILITIES.

DECEMBER 31, 1902.

ASSETS.

Real Estate		$516,172 36
Furniture and Exhibition Ware		8,250 54
Library		41,301 62
Stereotype Plates and Copies of History		246 50
$1,000, Chicago, Burlington & Quincy, 7 % R. R. Bonds, Cost		1,000 00
$2,000, Kansas City, Clinton & Springfield 5% R. R. Bonds, Cost		1,980 00
$10,000, Lake Shore & Michigan Southern 3½ % R. R. Bonds, Cost		10,415 25
$21,000, City of Newton 4 % Bonds, Cost		24,228 75
$50,000, Atchison, Topeka & Santa Fe 4 % R. R. Bonds, Cost		44,693 25
$50,000, Chicago, Burlington & Quincy, Nebraska Extension 4 % Bonds, Cost		50,012 50
$10,000, Chicago & West Michigan 5 % R. R. Bonds, Cost		9,987 50
$25,000, Kansas City, Fort Scott & Memphis 6 % Consols, Cost		27,523 75
$50,000, Chicago, Burlington & Quincy, Illinois Division, 3½ % R. R. Bonds, Cost		51,625 00
$8,000, Boston & Maine 4½ % R. R. Bonds, Cost		8,710 00
$5,000, West End Street Ry. Co. 4½ % Bonds, Cost		5,162 50
General Electric Co., 139 Shares of Stock, Cost		10,082 00
W. A. Hayes & A. P. Loring, Trustees		3,488 76
Cash		17,648 55
		$832,528 83

LIABILITIES.

Prize and other Funds invested in Bonds:

Samuel Appleton	Fund,	$1,000 00	
John A. Lowell	"	1,000 00	
Theodore Lyman	"	11,000 00	
			$13,000 00
Amount carried forward			$13,000 00

Amount brought forward . . .			$13,000 00	
Josiah Bradlee	Fund	$1,000 00		
Benjamin V. French	"	500 00		
H. H. Hunnewell	"	4,000 00		
W. J. Walker	"	2,354 43		
Levi Whitcomb	"	500 00		
Benjamin B. Davis	"	500 00		
Marshall P. Wilder	"	1,000 00		
John Lewis Russell	"	1,000 00		
Francis Brown Hayes	"	10,000 00		
Henry A. Gane	"	1,000 00		
John S. Farlow	"	2,501 92		
J. D. Williams French	"	5,000 29		
Benjamin H. Pierce	"	800 00		
			$43,156 64	
Prizes for 1902 payable in 1903 . .			8,250 00	
				$ 51,406 64
Surplus				781,122 19
				$832,528 83

C. E. RICHARDSON,
Treasurer.

MEMBERSHIP OF THE MASSACHUSETTS HORTICULTURAL SOCIETY, DECEMBER 31st, 1902.

Life Membership per last report	686		
Added in 1902	28		
Commuted from Annual	5		
		719	
Deceased	25		
			694
Annual Membership per last report	184		
Added in 1902	21		
		205	
Commuted to Life	5		
Deceased	3		
Resigned	1		
Dropped for non-payment for two years . .	7		
		16	
			189
Present Membership			883

INCOME FROM MEMBERSHIP.

28 new Life Members @ $30	$840 00
5 Commuted to Life @ $20	100 00
21 new Annual Members @ $10	210 00
Assessments	348 00
	$1,498 00

CHAS. E. RICHARDSON,
Treasurer.

Dr. *Massachusetts Horticultural Society in account with the Proprietors of the Cemetery of Mount Auburn.* **Cr.**

For Sales and Improvements within the Cemetery during the year ending December 31st, 1902.

To cost of filling up and improving land at Mount Auburn for the year ending December 31st, 1902, the Massachusetts Horticultural Society being charged with their proportion of same:			By Sales in January	$40 00	
Rear Walnut Avenue and Fern and Violet Path	$285 38		" " " April	1,192 00	
Between Cherry and Magnolia Avenues	283 96		" " " May	2,820 00	
Glen Avenue	36 75		" " " June	1,916 00	
	$606 09		" " " July	3,274 00	
			" " " August	564 20	
			" " " September	1,668 00	
			" " " October	2,280 50	
			" " " November	480 00	
			" " " December	20 00	
				$14,254 70	
			Net amount received from Receiving Tomb	1,043 00	
				$15,297 70	
			Less graves repurchased	60 00	
				$15,237 70	
			Deduct for Annual Expenses	1,400 00	
				$13,837 70	
One-fourth part of $606.09	$151 52				
Balance due Mass. Horticultural Society,	3,307 90				
		$3,459 42	One-fourth of $13,837.70 is		$3,459 42

E. & O. E.

JOHN L. DILL, *Treasurer.*

BOSTON, December 31st, 1902.

THE MASSACHUSETTS HORTICULTURAL SOCIETY

To the PROPRIETORS OF THE CEMETERY OF MOUNT AUBURN. *Dr.*

To cost of filling up and improving land at Mount Auburn for the year ending December 31st, 1902, the Massachusetts Horticultural Society being charged with their proportion of same.

Rear Walnut Avenue and Fern and Violet Path.

24.5 days, man and horse	$ 91 88	
86 days, man	193 50	
		$285 38

Between Cherry and Magnolia Avenue.

41.1 days, man and horse	$154 13	
8.4 days, man and horse	31 50	
3 days, man and horse	15 75	
36.7 days, man	82 58	
		283 96

Glen Avenue.

9.8 days, man and horse	36 75
	$606 09
One-fourth of $606.09	$151 52

[Signed] JAMES C. SCORGIE,
Supt. of the Cemetery of Mount Auburn.

MOUNT AUBURN, December 31, 1902.

I certify the foregoing to be a true copy of the improvements for the year 1902 rendered by the Superintendent.

[Signed] JOHN L. DILL,
Treasurer.

Massachusetts Horticultural Society.

OFFICERS AND STANDING COMMITTEES FOR 1903.

President.

O. B. HADWEN, of Worcester.

Vice-Presidents.

BENJAMIN P. WARE, of Clifton.
SAMUEL HOAR, of Concord.
JOSEPH R. LEESON, of Newton Centre.
OAKES AMES, of North Easton.

Treasurer and Superintendent of the Building.

CHARLES E. RICHARDSON, of Brookline.

Secretary and Librarian.

WILLIAM P. RICH, of Chelsea.*

Professor of Botany and Vegetable Physiology.

BENJAMIN M. WATSON, of Jamaica Plain.

Professor of Entomology.

SAMUEL H. SCUDDER, of Cambridge.

Delegate to the State Board of Agriculture.

WILLIAM H. SPOONER, of Jamaica Plain.

* Communications to the Secretary, on the business of the Society, should be addressed to him at Horticultural Hall, Boston.

STANDING COMMITTEES.

Executive.

THE PRESIDENT, O. B. HADWEN, CHAIRMAN.

THE CHAIRMAN OF THE FINANCE COMMITTEE, WALTER HUNNEWELL, *Ex officio.*

WILLIAM C. STRONG.
WILLIAM H. SPOONER.
NATHANIEL T. KIDDER.
FRANCIS H. APPLETON.
BENJAMIN C. CLARK.
CHARLES W. PARKER.
CHARLES F. CURTIS.

Finance.

WALTER HUNNEWELL, OF BOSTON, CHAIRMAN.

O. B. HADWEN.
ARTHUR F. ESTABROOK.

Lectures and Publication.

AARON LOW, OF HINGHAM, CHAIRMAN.

JAMES H. BOWDITCH.
E. W. WOOD.

Library.

WALTER S. PARKER, OF READING, CHAIRMAN.

GEORGE E. DAVENPORT.
CHARLES W. SWAN.
CHARLES W. JENKS.
T. OTIS FULLER.

Plants.

ARTHUR H. FEWKES, OF NEWTON HIGHLANDS, CHAIRMAN.

JAMES WHEELER.
DAVID F. ROY.
ROBERT CAMERON.
ROBERT MELROSE GREY.

Flowers.

KENNETH FINLAYSON, OF BROOKLINE, CHAIRMAN.

MICHAEL H. NORTON.
WILLIAM NICHOLSON.
ELIJAH A. WOOD
JULIUS HEURLIN.

Fruits.

E. W. WOOD, OF WEST NEWTON, CHAIRMAN.

CHARLES F. CURTIS.
WARREN FENNO.
J. WILLARD HILL.
GEORGE F. PIERCE.
JOHN L. BIRD.
FREDERICK W. DAMON.

Vegetables.

WARREN H. HEUSTIS, OF BELMONT, CHAIRMAN.

VARNUM FROST.
WALTER RUSSELL.
AARON LOW.
GEORGE D. MOORE.
JOSHUA C. STONE.
MICHAEL SULLIVAN.

Forestry and Roadside Improvement.

JAMES STURGIS PRAY, of Cambridge, Chairman.

NATHANIEL S. SHALER. HENRY S. HUNNEWELL.
JAMES H. BOWDITCH. HARLAN P. KELSEY.

Gardens.

PATRICK NORTON, of Dorchester, Chairman.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND ARRANGEMENTS, *Ex officiis.*

HENRY W. WILSON. J. WOODWARD MANNING.

For Establishing Prizes.

WILLIAM H. ELLIOTT, of Brighton, Chairman.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND GARDENS, *Ex officiis.*

JACKSON T. DAWSON.

Committee of Arrangements.

JOSEPH H. WOODFORD, of Boston, Chairman.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND GARDENS, *Ex officiis.*

ROBERT FARQUHAR.

MEMBERS FOR LIFE.

Members of the Society and all other persons who may know of deaths, changes in residence, or other circumstances showing that the following list is incorrect in any particular, will confer a favor by promptly communicating to the Secretary any needed corrections.

Information, or any clew to it, is especially desired in regard to members whose names are marked thus †.

Adams, Mrs. Charles Francis, South Lincoln.
Adams, Henry Saxton, Boston.
Alger, Rev. R. F., Dorchester.
Allen, Hon. Charles H., Lowell.
Allen, Thomas, Boston.
Ames, F. Lothrop, North Easton.
Ames, Mrs. F. L., North Easton.
Ames, John S., North Easton.
Ames, Miss Mary S., North Easton.
Ames, Oakes, North Easton.
Ames, Oliver, North Easton.
Ames, Mrs. Oliver, Sr., North Easton.
Ames, Preston Adams, Washington D. C.
Ames, Miss Susan E., North Easton
Amory, C. W., Boston.
Amory, Frederick, Boston.
Anderson, Larz, Brookline.
Andrews, Charles L., Milton.
Andrews, Frank W., Washington, D. C.
Andros, Milton, San Francisco, Cal.
Appleton, Francis H., Boston.
Appleton, William S., Boston.
Arnold, Mrs. George Francis, Brookline.
Ash, John, Pomfret Centre, Conn.
Asmus, Ernst G., West Hoboken, N. J.
Atkins, Edwin F., Belmont.
Ayer, James B., Boston.

Bailey, Jason S., West Roxbury.
Bailey, Robert M., Dedham.
Baker, Clifton P., Dedham.
Baker, James E., South Lincoln.
Ball, George H., Boston.
Banfield, Francis L., M.D., Worcester.
Barber, J. Wesley, Newton.
Barnard, James M., Boston.
Barnard, Robert M., Everett.
Barnes, Walter S., Boston.
† Barney, Levi C., Boston.
Barry, John Marshall, Boston.
Barry, William C., Rochester, N. Y.
Bartlett, Francis, Beverly.
Bartlett, Miss Mary F., Boston.
Bates, Miss Mary D., Ipswich.
Baylies, Walter C., Taunton.
Beal, Leander, Swampscott.
Becker, Frederick C , Cambridge.
Beckford, Daniel R., Jr., Dedham.
Beebe, E. Pierson, Boston.
Beebe, Franklin H., Boston.
Beebe, J. Arthur, Boston.
Bigelow, Albert S., Cohasset.
Bigelow, Joseph S., Cohasset.
Bigelow, Dr. William Sturgis, Boston.
Black, George N., Manchester.

Blake, Miss Anne, Brookline.
Blake, Mrs. Arthur W , Brookline.
Blake, Edward D., Boston.
Blake, Francis, Weston.
Blake, Frederick A., Rochdale.
Blanchard, John W., West Newton.
Blinn, Richard D., Chicago, Ill.
Bliss, William, Boston.
Boardman, Samuel M., Hyde Park.
Boardman, T. Dennie, Manchester.
Bolles, William P., M. D., Roxbury.
Bosler, Frank C., Carlisle, Penn.
Bowditch, Charles P., Jamaica Plain.
Bowditch, Ernest W., Milton.
Bowditch, James H., Brookline.
Bowditch, Nathaniel I., Framingham.
Bowditch, William E., Roxbury.
Bowker, William H., Boston.
Brackett, Cephas H., Brighton.
Breck, Joseph Francis, Allston.
Bremer, Mrs. John L., Manchester.
Bresee, Albert, Hubbardton, Vt.
Brewer, Francis W., Hingham.
Briggs, William S., Lincoln.
Brigham, William T., Honolulu, Hawaii.
Brooks, Henry, Lincoln.
Brooks, J. Henry, Boston.
Brooks, Lawrence, Groton.
Brooks, Peter C., Boston.
Brooks, Shepherd, Boston.
Brown, Alfred S., Jamaica Plain.
Brown, Edward J., Weston.
Brown, George Barnard, Brookline.
Brown, John M., Belmont.
Brown, Samuel N., Boston.
Burlen, William H., Boston.
Burnett, Harry, Southborough.
Burnham, John A., Wenham.
Burr, Matthew H., Hingham.
Buswell, Frank E., Brooklyn, N. Y.
Butler, Aaron, Wakefield.
Butler, Edward K., Jamaica Plain.

Cabot, Dr. Arthur T., Boston.
Cabot, George E., Boston.
†Cadness, John, Flushing, N. Y.
Cains, William, South Boston.
Calder, Augustus P., Boston.
Cameron, Robert, Cambridge.
Campbell, Francis, Cambridge.
Capen, John, Boston.
Carlton, Samuel A., Boston.
Carr, Hon. John, Roxbury.
Carter, Charles N., Boston.
Carter, Miss Maria E., Woburn.
Cartwright, George, Dedham.
Casas, W. B. de las, Malden.
Chadbourne, Marshall W., East Watertown.
Chaffin, John C., Newton.
Chamberlain, Chauncy W., Boston.
†Chase, Andrew J., Lynn.
Chase, Daniel E., Somerville.
Chase, William M., Dorchester.
Cheney, Mrs. Elizabeth S., Wellesley.
Childs, Nathaniel R., Boston.
Choate, Charles F., Southborough.
Christie, William, Everett.
Claflin, Hon. William, Newtonville.
Clapp, Edward B., Dorchester.
Clapp, James H., Dorchester.
Clapp, William C., Dorchester.
Clark, Benjamin C., Boston.
Clark, B. Preston, Cohasset.
Clark, Miss Eleanor J., Pomfret Centre, Conn.
Clark, J. Warren, Millis.
Clarke, Miss Cora H., Boston.
Clarke, Eliot C., Boston.
Clough, Micajah Pratt, Lynn.
Cobb, John C., Milton.
Coburn, Isaac E., Everett.
Codman, James M., Brookline.
Codman, Ogden, South Lincoln.
Coe, Miss Mary Alma, Boston.
Coffin, Abraham B., Winchester.
Cole, Edward E., Boston.
Collamore, Miss Helen, Boston.
Colton, Samuel H., Worcester.
Converse, Elisha S., Malden.

Converse, Col. H. E., Malden.
Coolidge, Harold J., Boston.
Coolidge, Joshua, Mount Auburn.
Coolidge, J. Randolph, Chestnut Hill.
Coolidge, Mrs. J. Randolph, Chestnut Hill.
Coolidge, T. Jefferson, Jr., Boston.
Cottle, Henry C., Boston.
Cox, Thomas A., Dorchester.
Coy, Samuel I., Boston.
Craig, William Nicol, North Easton.
Crane, Zenas, Dalton.
Crawford, Dr. Sarah M., Roxbury.
Crocker, Hon. George G., Boston.
Crocker, Miss S. H., Boston.
Crosby, George E., West Medford.
Cross, Alfred Richard, Nantasket.
Crowell, Randall H., Watertown.
Curtis, Charles F., Jamaica Plain.
Curtis, Charles P., Swampscott.
Curtis, Charles P., Jr., Boston.
Cushing, Livingston, Weston.
Cushing, Robert M., Boston.
Cutting, Gen. Walter, Pittsfield.

†Daggett, Henry C., Boston.
Dalton, Charles H., Beverly.
Daly, John C., Roxbury.
Damon, Frederick W., Arlington.
Dana, Charles B., Wellesley.
Daniels, Dr. Edwin A., Boston.
Davenport, Albert M., Watertown.
Davenport, George E., Medford.
Davis, Arthur E., Wellesley.
Davis, Mrs. Arthur E., Wellesley.
Davis, Edward L., Worcester.
Davis, L. Shannon, Brookline.
Dawson, Jackson T., Jamaica Plain.
Dee, Thomas W., Cambridge.
Denny, Clarence H., Boston.
Denton, Eben, Dorchester.
Dexter, F. Gordon, Boston.
Dexter, George, Beverly.
Dike, Charles C., Stoneham.
Doane, Edgar Howard, Wenham.
Doliber, Thomas, Brookline.
Donald, William, West Roxbury.
Donaldson, James, Roxbury.
Dorr, George, Dorchester.
Dove, George W. W., Andover.
Dowse, William B. H., West Newton.
Draper, Hon. Eben S., Hopedale.
Draper, George A., Hopedale.
Dreer, William F., Philadelphia, Pa.
Dumaresq, Herbert, Chestnut Hill.
Duncan, James L., New York, N. Y.
Dunlap, James H., Nashua, N. H.
Durant, William, Boston.
Durfee, George B., Fall River.
Dutcher, Frank J., Hopedale.
Dwight, Theodore F., Kendal Green.
Dyer, Herbert H., Cambridge.

Eaton, Horace, Cambridge.
Edgar, William W., Waverly.
Eldredge, H. Fisher, Boston.
†Eldridge, E. H., Roxbury.
Elliot, Mrs. John W., Boston.
Elliott, William H., Brighton.
Endicott, William, Boston.
Endicott, William, Jr., Boston.
Endicott, William C., Jr., Danvers.
Endicott, William E., Canton.
Estabrook, Arthur F., Boston.
Ewell, Warren, Dorchester.

Fabyan, George F., Brookline.
Fairchild, Charles, Boston.
Falconer, William, Pittsburgh, Pa.
Farlow, Lewis H., Cambridge.
Farnsworth, Mrs. William, Dedham.
Farquhar, James F. M., Roslindale.
Farquhar, John K. M. L, Roxbury.
Farquhar, Robert, North Cambridge.
Faxon, John, Quincy.
Fay, H. H., Wood's Holl.
Fay, Joseph S., Jr., Wood's Holl.
Fenno, L. Carteret, Boston.
Fessenden, George B., Allston.
Fewkes, Arthur H., Newton Highlands.
Finlayson, Kenneth, Brookline.
Fisher, Peter, Ellis.

Flagg, Augustus, Boston.
Fletcher, George V., Belmont.
Fletcher, J. Henry, Belmont.
Fletcher, John W., Chelsea.
Flint, David B., Boston.
Foster, Charles H. W., Brookline.
Foster, Francis C., Cambridge.
Fottler, John, Jr., Dorchester.
Fowle, George W., Jamaica Plain.
French, Miss Caroline L. W., Boston.
French, S. Waldo, Jamaica Plain.
French, W. Clifford, Newton.
Frohock, Roscoe R., Malden.
Frost, Irving B., Belmont.
Frost, Varnum, Arlington.

Galloupe, Charles W., Swampscott.
Gardner, Mrs. Augustus P., Hamilton.
Gardner, George A., Boston.
Gardner, George P., Boston.
Gardner, John L., Boston.
Gardner, Mrs. John L., Brookline.
Gardner, William Amory, Groton.
Gaston, William A., Boston.
Gibbs, Wolcott, M.D., Newport, R.I.
Gill, George B., Medford.
Gillard, William, Dorchester.
Gilmore, E. W., North Easton.
Gilson, F. Howard, Wellesley Hills.
Goddard, Joseph, Sharon.
Goodell, L. W., Dwight.
† Gould, Samuel, Boston.
Gowing, Mrs. Clara E., Kendal Green.
Gray, James, Wellesley.
Gray, Mrs. John C., Boston.
Gregory, Hon. James J. H., Marblehead.
Grew, Edward S., Boston.
Grey, Benjamin, Malden.

Hadwen, Obadiah B., Worcester.
Hale, James O., Byfield.
Hall, Edwin A., Cambridgeport.
Hall, George A., Chelsea.
Hall, Jackson E., Cambridge.
Hall, Osborn B., Malden.
Hall, William F., Brookline.
Halliday, William H., South Boston.
Hammond, Gardiner G, New London, Conn.
Hammond, George W., Boston.
† Harding, George W., Arlington.
Harding, Louis B., Chestnut Hill.
Hardy, F. D., Cambridgeport.
Hargraves, William J., Jamaica Plain.
Harlow, James F., Quincy.
Harris, Charles, Cambridge.
Harris, Thaddeus William, A.M., Keene, N. H.
Hartshorn, Arthur E., Worcester.
Harwood, George Fred, Newton.
Haskell, Edwin B., Auburndale.
Hastings, Levi W., Brookline.
Hatch, Mrs. C. S., North Cambridge.
Hatch, Edward, Boston.
Haven, Franklin, Boston.
Hawken, Mrs. Thomas, Rockland, Me.
Hayward, George P., Roxbury.
† Hazeltine, Hazen, Boston.
Hellier, Charles E., Boston.
Hemenway, Augustus, Canton.
Hemenway, Mrs. Augustus, Canton.
Henshaw, Joseph P. B., Boston.
Henshaw, Samuel, Cambridge.
Heurlin, Julius, South Braintree.
Hewett, Miss Mary C., Canton.
Hews, Albert H., North Cambridge.
Higginson, Francis L., Boston.
Higginson, Mrs. Henry L., Boston.
Hilbourn, A. J., Boston.
Hill, John, Stoneham.
Hittinger, Jacob, Mt. Auburn.
Hoar, Samuel, Concord.
Hodgkins, John E., Portsmouth, N.H.
Hoitt, Hon. Charles W., Nashua, N. H.
Hollingsworth, Amor L., Milton.
Hollingsworth, Z. T., Boston.

Hollis, George W., Grantville.
Holmes, Edward J., Boston.
Holt, Gustavus C., Belmont.
Holt, Mrs. Stephen A., Cambridge.
Holt, William W., Winchester.
Hooper, Mrs. Robert C., Boston.
Hooper, William, Boston.
Horner, Mrs. Charlotte N.S., Georgetown.
Horsford, Miss Kate, Cambridge.
Hosmer, Oscar, Wenham.
Hovey, Charles H., South Pasadena, Cal.
Hovey, Stillman S., Woburn.
Howard, Joseph W., Somerville.
Hubbard, Charles Wells, Weston.
Hubbard, James C., Everett.
Humphrey, George W., Dedham.
Hunnewell, Arthur, Wellesley.
Hunnewell, Henry Sargent, Wellesley.
Hunnewell, Walter, Wellesley.
Hunt, Dudley F., Reading.
Hunt, Francis W., Melrose.
Hunt, Franklin, Charlestown, N. H.
Hunt, William H , Concord.

Jack, John George, Jamaica Plain.
Jackson, Charles L., Cambridge.
Jackson, Robert T., Boston.
James, Ellerton, Nahant.
James, Mrs. Ellerton, Nahant .
James, George Abbot, Nahant.
Janvrin, William S., Revere.
Jeffries, William A., Boston.
Jenks, Charles W., Bedford.
Johanssohn, Emil, Brookline.
Johnson, J. Frank, Malden.
Jones, Jerome, Brookline.
Jones, Dr. Mary E., Boston.
Jordan, Eben D., Boston.
Jordan, Henry G., Hingham.
Jose, Edwin H., Cambridgeport.

Kakas, Edward, West Medford.
Kellen, William V., Marion.
Kelley, George B., Jamaica Plain.
Kendall, D. S., Woodstock, Ont.
Kendall, Edward, Cambridgeport.
† Kendall, Joseph R., San Francisco, Cal.
Kendall, Dr. Walter G., Atlantic.
Kendrick, Mrs. H. P., Boston.
Kennedy, George G., M.D., Roxbury.
Kent, John, Chestnut Hill.
Keyes, John M., Concord.
Kidder, Charles A., Southborough.
Kidder, Nathaniel T., Milton.
† Kimball, A. P., Boston.
Kimball, David P., Boston.
King, D. Webster. Boston.
Kingman, Abner A., Brookline.
Kingman, C. D., Middleborough.
Kinney, H. R., Worcester.
Knapp, Walter H., Newtonville.

Lamb, Horatio A., Milton.
Lancaster, Charles B., Boston.
Lanier, Charles, Lenox.
Lawrence, Amory A., Boston.
Lawrence, Amos A., Boston.
Lawrence, James, Groton.
Lawrence, John, Groton.
Lawrence, Rt. Rev. William, Boston.
Learned, Charles A., Arlington.
Lee, Daniel D., Jamaica Plain.
Lee, Francis H., Salem.
Lee, George C., Newton.
Leeson, Hon. Joseph R., Newton Centre.
Leighton, George B., Monadnock, N. H.
Lemme, Frederick, Charlestown.
Leuchars, Robert B., Dorchester.
Lincoln, George, Hingham.
Lincoln, Col. Solomon, Boston.
Little, James L., Brookline.
Little, John Mason, Swampscott.
Locke, Edwin F., West Medford.
Locke, Isaac H., Belmont.
Lockwood, Rhodes, Boston.
Lodge, Richard W., Boston.

Loftus, John P., Dorchester.
Loomis, Elihu G., Bedford.
Loring, Augustus P., Beverly.
Loring, Mrs. William Caleb, Beverly.
Lothrop, William S. H., Boston.
Low, George D., Boston.
†Lowder, John, Watertown.
Lowell, Abbott Lawrence, Boston.
Lowell, Miss Amy, Brookline.
Luke, Otis H., Brookline.
Lumb, William, Boston.
Lunt, William W., Hingham.
Lyman, George H., Wareham.
Lyman, Mrs. Theodore, Brookline.

Mabbett, George, Plymouth.
Mackie, George, M. D., Attleboro.
† Mahoney, John, Boston.
Mallett, E. B., Jr., Freeport, Me.
Mann, James F., Ipswich.
Manning, Jacob W., Reading.
Manning, J. Woodward, Reading.
Manning, Mrs. Lydia B., Reading.
Manning, Warren H., Brookline.
Marshall, Frederick F., Everett.
Marston, Howard, Boston.
Mason, Miss Ellen F., Boston.
Mason, Col. Frederick, Taunton.
Mathison, Fred. R., Waltham.
Matthews, Nathan, Boston.
Matthews, Nathan, Jr., Boston.
May, Frederick W. G., Boston.
McCarty, Timothy, Providence, R. I.
McWilliam, George, Whitinsville.
Melvin, George, South Framingham.
Melvin, James C., West Newton.
Merriam, Charles, Boston.
Merriam, Herbert, Weston.
Merrill, Hon. Moody, Roxbury.
Metivier, James, Cambridge.
Milmore, Mrs. Joseph, Washington, D. C.
Minot, Charles S., Milton.
Mitton, Edward J., Brookline.
Mixter, George, Boston.
Monteith, David, Dedham.
Montgomery, Alexander, Natick.
Montgomery, Alexander, Jr., Natick
Moore, George D., Arlington.
Moore, John H., Concord.
Morgan, George H., New York, N. Y.
Morse, John T., Jr., Boston.
Morse, Robert M., Jamaica Plain.
Morton, James H., Mattapan.
Moseley, Charles H., Dorchester.
Motley, E. Preble, Boston.
Mudge, George A., Portsmouth, N. H.
Murdock, Albert L., Boston.
Murphy, William Bowen, Boston.
Murray, Peter, Fairhaven.
Mutch, John, Newtonville.

Nevins, Mrs. David, Methuen.
Newman, John R., Winchester.
Newton, Rev. William W., Pittsfield.
Nickerson, Mrs. George A., Dedham.
Norton, Charles W., Allston.
Norton, Edward E., Boston.

Oakman, Hiram A., North Marshfield.
Olmsted, Frederick Law, Jr., Brookline.
Olmsted, John C., Brookline.
Orpet, Edward O., South Lancaster.

Page, Mrs. Henrietta, Boston.
Paige, Clifton H., Mattapan.
Parker, Charles W., Boston.
Parkman, Henry, Boston.
Parsons, John E., Lenox.
Patten, Marcellus A., Tewksbury.
Paul, Alfred W., Dighton.
Peabody, Francis H., Boston.
Peabody, George A., Danvers.
Peabody, John E., Salem.
Peabody, S. Endicott, Salem.
Peck, O. H., Denver, Col.
Peck, William G., Arlington.
Peirce, Miss Marion W., Topsfield.
† Perry, George W., Malden.

Pfaff, Col. Charles, South Framingham.
Phillips, John C., North Beverly.
Phillips, Mrs. John C., North Beverly.
Phillips, William, North Beverly.
Pickman, Dudley L., Boston.
Pickman, Mrs. Ellen R., Boston.
Pierce, Dean, Brookline.
Pierce, Elisha N., Waltham.
Pierce, George Francis, Neponset.
Pond, Preston, Winchester.
Poor, John R., Boston.
Pope, Col. Albert A., Cohasset.
Porter, Alexander S., Boston.
Porter, James C., Wollaston.
Porter, Hon. Joseph S., Washington, D. C.
Prang, Louis, Boston.
Pratt, Laban, Dorchester.
Pratt, Lucius G., West Newton.
Pratt, Robert M., Boston.
Prendergast, J. M., Boston.
Prescott, Eben C., New York, N. Y.
Presson, Alfred, Gloucester.
Pringle, Cyrus G., Charlotte, Vt.
Proctor, T. E., Boston.
Prouty, Gardner, Littleton.
Putnam, George, Manchester.
Putnam, George J., Brookline.
Putnam, Joshua H., Newton Centre.

Quinby, Hosea M., M.D., Worcester.

Raddin, Everett W., North Cambridge.
Rand, Harry S., North Cambridge.
Rand, Oliver J., Cambridgeport.
Rawson, Warren W., Arlington.
Ray, James F., Franklin.
Raymond, Walter, Boston.
Read, Charles A., Manchester.
Reardon, Edmund, Cambridgeport.
Reardon, John B., Boston.
Reed, Henry R., Jamaica Plain.
Rice, George C., Worcester.
Rich, William P., Chelsea.
Richards, John J., Brookline.
Richardson, Charles E., Brookline.
Richardson, Dr. William L., Boston.
Rinn, J. Ph., Boston.
Ripley, Charles, Dorchester.
Ripley, Ebed L., Hingham Centre.
Robbins, I. Gilbert, Melrose Highlands.
Robinson, John, Salem.
Robinson Joseph B., Dorchester.
Roffe, Albert H., Newton Centre.
Rogers, Mrs. Jacob C., Peabody.
Roland, Thomas, Nahant.
Rothwell, James E., Brookline.
Roy, David Frank, Malden.
Ruddick, William H., M.D., South Boston.
Russell, George, Woburn.
Russell, James S., Milton.
Russell, Hon. John E., Leicester.
Russell, Walter, Arlington.

Salisbury, William C. G., Brookline.
Saltonstall, Richard M., Chestnut Hill.
Sanford, Oliver S., Wellesley.
Sanger, Mrs. George P., Boston.
Sargent, Andrew Robeson, Brookline.
Sargent, Charles S., Brookline.
Sargent, Mrs. Charles S., Brookline.
Sargent, Charles Sprague, Jr., Brookline.
Sargent, Mrs. Francis W., Wellesley.
Sawtelle, Eli A., Boston.
Sawyer, Timothy T., Boston.
Scorgie, James C., Cambridge.
† Scott, Charles, Newton.
Sears, Miss Clara E., Boston.
Sears, Miss Emily E., Boston.
Sears, Dr. Henry F., Boston.
Sears, J. Montgomery, Boston.
Sears, Mrs. J. Montgomery, Boston.
Shaler, Nathaniel S., Cambridge.
Sharp, Miss Helen, Boston.

Shaw, Christopher C., Milford, N. H.
Shaw, Francis, Wayland.
Shaw, Mrs. Robert G., Wellesley.
Sherman, William H., Boston.
Shorey, John L., Lynn.
Shuman, Hon. A., Roxbury.
Shurtleff, Josiah B., Jr., Revere.
Sias, Charles D., Wenham.
Siebrecht, H. A., New Rochelle, N.Y.
Simpkins, Miss Mabel, Yarmouth.
Skinner, Francis, Boston.
Skinner, Francis, Jr., Dedham.
Sleeper, Henry Davis, Boston.
Smith, Archibald, West Somerville.
Smith, Calvin W., Wellesley Hills.
Smith, Charles H., Newton Highlands.
Smith, Charles S., Lincoln.
Smith, Edward N., San Francisco, Cal.
Smith, George O., East Lexington.
Smith, Thomas Page, Waltham.
Snow, Eugene A., Melrose.
Sohier, Col. William D., Beverly.
Souther, Charles H., Jamaica Plain.
Spaulding, Edward, West Newton.
Spooner, William H., Jamaica Plain.
Sprague, Isaac, Wellesley Hills.
Springall, George, Malden.
Stearns, Charles H., Brookline.
Stearns, Frank W., Newton.
Stedman, Henry R., M. D., Roslindale.
Stevens, Hon. Moses T., Andover.
Stewart, William J., Winchester.
Stone, Charles A., Newton.
Stone, Charles W., Boston.
Stone, Prof. George E , Amherst.
Stone, George F., Chestnut Hill.
Strater, Herman, Roxbury.
Strong, William C., Waban.
Sturgis, Richard Clipston, Boston.
Swain Charles E., Roxbury.
Sweet, Everell F., Malden.

Taylor, Charles H., Boston.
Taylor, Horace B., Portland, Me.
Temple, Felker L., Boston.
Tenney, C. H., Methuen.
Thatcher, William, Brookline.
Thayer, Mrs. Alice R., Boston.
Thayer, Bayard, Lancaster.
Thayer, Mrs. Bayard, Lancaster.
Thayer, Eugene V. R., South Lancaster.
Thayer, Mrs. Eugene V. R., South Lancaster.
Thayer, John E., South Lancaster.
Thayer, Mrs. John E., South Lancaster.
Thayer, Nathaniel, Lancaster.
Thayer, Mrs. Nathaniel, Lancaster.
Thayer, S. V. R., Boston.
Thiemann, Hermann, Manchester.
Thomas, W. B., Manchester.
Thurlow, Thomas C., West Newbury.
Tilton, Stephen W., Allston.
Todd, John, Hingham.
Tolman, Benjamin, Concord.
Tolman, Miss Harriet S., Boston.
Toppan, Roland W., Malden.
Torrey, Everett, Charlestown.
Tower, Miss Ellen May, Lexington.
Tower, Mrs. Helen M., Cambridge.
Tower, Sylvester, Boston.
Travis, Charles B., Brighton.
Trepess, Samuel J., Glencove, L. I., N. Y.
Tucker, Lawrence, Boston.
†Turner, John M., Dorchester.

Underwood, Loring, Belmont.

Vander-Woerd, Charles, Waltham.
Vaughan, William Warren, Boston.
Vinal, Miss Mary L., Somerville.

Wakefield, E. H., Cambridge.
Walcott, Henry P., M.D., Cambridge.
Waldo, C. Sidney, Jamaica Plain.
Wales, George O., Braintree.

Walker, Miss Mary Sophia, Waltham.
Walley, Mrs. W. P., Boston.
Walsh, Michael H., Wood's Holl.
Waltham, George C., Dorchester.
Walton, Daniel G., Wakefield.
Warburton, Chatterton, Fall River.
Ward, Francis Jackson, Roxbury.
Ward, John, Newton Centre.
Ware, Benjamin P., Clifton.
Ware, Miss Mary L., Boston.
Warren, Samuel D., Dedham.
Washburn, Andrew, Hyde Hark.
Watson, Benjamin M., Jamaica Plain.
Watson, Thomas A., East Braintree.
Watts, Isaac, Waverly.
Webber, Aaron D., Boston.
Webster, Hollis, Cambridge.
Welch, David, Dorchester.
Welch, Edward J., Dorchester.
Weld, Christopher Minot, Jamaica Plain.
Weld, George W., Boston.
Weld, Richard H., Boston.
Weld, Gen. Stephen M., Dedham.
West, Mrs. Maria L., Neponset.
Weston, Seth, Chelsea.
Wheeler, Frank, Concord.
Wheeler, James, Brookline.
Wheeler, Wilfred, Concord.
Wheelwright, A. C., Brookline.
Wheelwright, Edmund M., Boston.
Whitcomb, William B., Medford.
White, Mrs. Charles T., Boston.
White, Francis A., Brookline.
White, George R., Boston.
White, Joseph H., Brookline.
Whitney, Arthur E., Winchester.
Whitney, Ellerton P., Milton.
Whitney, Henry M., Cohasset.
Whittier, George E., Groton.
Whittier, William Benjamin, South Framingham.
Wigglesworth, George, Milton.
Wilbur, George B., Wood's Holl.
Wilder, Edward Baker, Dorchester.
Wilder, Henry A., Malden.
Willard, E. W., Newport, R. I.
Willcutt, Levi L., Brookline.
Williams, Miss Adelia Coffin, Roxbury.
Williams, Benjamin B., Boston.
Williams, Henry Bigelow, Boston.
Williams, John Davis, Boston.
Williams, Philander, Taunton.
Willis, Joshua C., Roxbury.
Wilson, Col. Henry W., Boston.
Wilson, William Power, Boston.
Winthrop, Robert C., Jr., Boston.
Wood, William K., West Newton.
Wright, George C., West Acton.
Wright, John G., Brookline.
Wyman, Oliver B., Shrewsbury.
Wyman, Windsor H., North Abington.

ANNUAL MEMBERS.

Members of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Alles, William H., Chestnut Hill.
Anderson, George M., Milton.
Arnold, Miss Sarah L., Newton Centre.
Atkinson, Miss Caroline P., Brookline.
Atkinson, Edward, Brookline.
Ayres, Miss Helen F., Medford.

Bangs, Francis R., Boston.
Barker, John G., South Bend, Ind.
Barr, John, Wellesley.
Bigelow, Arthur J., Eastlake, Worcester.
Bigelow, Mrs. Nancy J., Southborough.
Bird, John L., Dorchester.
Blackmur, Paul R., Quincy.
Blomberg, Carl, North Easton.
Boyden, Clarence F., Taunton.
Bradley, Miss Abby A., Hingham.
Braman, George H., Newton.
Breck, Charles H., Newton.
Breed, Edward W., Clinton.
Brunton, Frank, Stockbridge.
Bullard, John C., Cambridge.
Butler, Edward, Wellesley.

Carpenter, Frank O., West Roxbury.
Carter, Mrs. Sarah D. J., Wilmington.
Cary, Miss Alice B., Lexington.
Chase, Joseph S., Malden.
Chase, Philip A., Lynn.
Chubbuck, Isaac Y., Roxbury.
Clapp, Henry L., Roxbury.
Clark, John W., North Hadley.
Clark, Joseph, Manchester.
Clark, Theodore M., Newtonville.
Clinkaberry, Henry T., Trenton, N. J.
Collins, Frank S., Malden.
Comley, Norris F., Lexington.
Coolidge, Dr. Sumner, Watertown.
Cotter, Lawrence, Dorchester.
Cotting, Charles U., Boston.
Crosby, J. Allen, Jamaica Plain.
Curtis, Joseph H., Boston.
Curtis, Louville, Tyngsborough.

Davis, Frederick S., West Roxbury.
Derby, William H., Revere.
Dolbear, Mrs. Alice J., College Hill.
Dorr, George B., Boston.
Doyle, William E., Cambridge.
Duffley, Daniel, Brookline.
Duncan, John W., West Roxbury.

Eastman, Edmund C., Brookline.
Eaton, Warren E., Reading.
Endicott, Miss Charlotte M., Canton.
Eustis, William Tracy, Brookline.
Evans, Frank H., Malden.
Ewell, Marshall F., Marshfield Hills.

Farlow, Mrs. William G., Cambridge.
Fenno, Warren, Revere.
Fisher, Sewell, Boston.
Fiske, Harry E., Wollaston.

Fitzgerald, Desmond, Brookline.
Fletcher, Fred W., Auburndale.
Forbes, William H., Jamaica Plain.
Foster, Lucius H , Dorchester.
Francis, George E., M. D., Worcester.
Fuller, T. Otis, Needham.

Garthley, James, Fairhaven.
Gill, Mrs. E. M., Medford.
Gilman, Hon. Virgil C , Nashua, N. H.
Grew, Henry Sturgis, Boston.
Grey, Robert Melrose, North Easton.
Grey, Thomas J., Chelsea.

Hall, Charles H., M. D., Corning, Cal.
Hall, Stacy, Boston.
Hallstram, Charles W., Boston.
Ham, Fernald E., Burlington.
Harris, Frederick L., Wellesley.
Harrison, C. S., York, Nebraska.
Harrison, Thomas, Melrose Highlands.
Hartwell, Samuel, Lincoln.
Hatfield, T. D., Wellesley.
Hersey, Edmund, Hingham.
Heustis, Warren, H., Belmont.
Hildreth, Miss Ella F., Lowell.
Hill, Arthur Dehon, Boston.
Hill, J. Willard, Belmont.
Hinds, Warren D., Townsend.
Hobbs, George M., Boston.
Hollis, George, South Weymouth.
Houghton, George S., West Newton.
Hovey, Charles L., Waban.
Howden, Thomas, Whitinsville.
Hubbard, Allen, Newton Centre.
Hubbard, F. Tracey, Cambridge.
Huston, Miss Katharine W., Jamaica Plain.

Illenberger, Henry, Brookline.
Ireland, Robert D., Winthrop.

James, Robert Kent, Dorchester.
Jameson, G. W., East Lexington.

Keith, Mrs. Mary R., Washington, D. C.
Kelsey, Harlan P., Boston.
Kemp, William S , Brookline.
Kennard, Frederic H., Brookline.
Kimball, Richard D., Waban.
Knott, N. W. T., Waban.

Lancaster, Mrs. E. M , Roxbury.
Laurie, Robert, Newport, R. I.
Lawson, Joshua. Brookline.
Lewis, E. L., Taunton.
Lincoln, Miss Agnes W., Medford.
Lomax, George H., Somerville.
Loring, Mrs. Thacher, Brookline.
Loring, William C., Beverly.
Lothrop, Thornton K., Boston.
Low, Hon. Aaron, Hingham.

Manda, W. A., South Orange, N J.
Manning, A. Chandler, Reading.
Manning, Richard C., Salem.
Martin William J., Milton.
Maynard, Charles, North Easton.
McLaren, Anthony, Westwood.
Meriam, Horatio C., D.M.D., Salem.
Metcalf, Dr. Ben H., Winthrop.
Milman, William, Roxbury.
Moody, Abner J., Lexington.
Morgan, George M., Boston.
Morrison, William, Cohasset.
Moseley, Frederick C., Dorchester.
Moseley, Frederick Strong, Newburyport.
Munson, Prof. W. M., Orono, Me.

Newton, John F., Roxbury.
Nicholson, William, Framingham.
Nixon, Arthur, Taunton.
Norton, Michael H., Boston.
Norton, Patrick, Dorchester.

Oakes, F. L., Newton.

Park, William D., Boston.
Parker, John, Newtonville.
Parker, Walter S., Reading.
Patterson, William, Quincy.
Peirce, George H., Concord Junction.
Pettigrew, John A., Jamaica Plain.
Pierce, Mrs. F. A., Brookline.
Plimpton, Willard P., West Newton.
Pray, James Sturgis, Cambridge.
Pritchard, John, Newtonville.
Purdie, George A., Ormond, Florida.

Rea, Charles H., Norwood.
Rea, Frederic J., Norwood.
Rich, Miss Ruth G., Dorchester.
Rich, William E. C., Roxbury.
Richards, Mrs. P. D., West Medford.
Robb, Peter B., Whitinsville.
Robbins, Oliver R., Weston.
Robinson, Walter A., Arlington.
Rodman, Miss Mary, Concord.
Ross, Charles W., Newtonville.
Ross, Henry Wilson, Newtonville.

Sander, Charles, Brookline.
Saunders, Miss Mary T., Salem.
Scott, Augustus E., Lexington.
Scudder, Samuel H., Cambridge.
Searles, E. F., Methuen.
Seaver, Edwin P., Waban.
Sharples, Stephen P., Cambridge.
Shaw, Hon. Edward P., Newburyport.
Shea, James B., Jamaica Plain.
Shepard Harvey N., Boston.
Squire, Miss Esther A., North Cambridge.
Stevens, Mrs. Mary L., Cambridge.
Stone, Joshua C., Watertown.
Strange, David T., Stoneham.
Sullivan, Michael, Revere.
Sutherland, George A., Roslindale.
Swan, Charles W., M.D., Brookline.

Tailby, Joseph, Wellesley.
Teele, William H., West Acton.
Tobey, Rufus T., Roxbury.
Tyler, Mrs. John F., North Andover.
Tyndale, Theodore H., Weymouth.

Vaughan, J. C., Chicago, Ill.

Ware, Horace E., Milton.
Warren, Samuel H., Weston.
Welch, Patrick, Dorchester.
Westwood, Thomas H., Jamaica Plain.
Wheeler, Ezra H., Dorchester.
Wheeler, Henry A., Newtonville.
Wheelwright, George William, Jamaica Plain.
White, W. Henry, Lowell.
Whitney, Joseph, Cambridgeport.
Whiton, Hon. Starkes, Hingham Centre.
Wilder, Miss Grace S., Dorchester.
Wilder, Miss Jemima R., Dorchester.
Wilkie, Edward A., Newtonville.
Winter, William C., Mansfield.
Wolcott, Mrs. H. L. T., Dedham.
Wood, Mrs. Anna D., West Newton.
Wood, Elijah A., West Newton.
Wood, E. W., West Newton.
Woodford, Joseph H., Boston.
Woods, Henry F., Boston.

Young, E. Bentley, Boston.

Zirngiebel, Denys, Needham.

EXTRACTS FROM THE CONSTITUTION AND BY-LAWS.

SECTION XXII.

Life Members.

The payment of thirty dollars shall constitute a Life Membership, and exempt the member from all future assessments, and any Annual Member, having paid all dues, may become a Life Member by the payment of twenty dollars in addition thereto.

Annual Membership.

Every Annual Member, before he receives his diploma, or exercises the privileges of a member, shall pay the sum of ten dollars as an admission fee, and shall be subject afterwards to an annual assessment of two dollars.

SECTION XXIII.

Withdrawal or Discontinuance of Membership.

Any member may withdraw from the Society, on giving notice to the Treasurer and paying the amount due from him. Any member who shall neglect for the space of two years to pay his annual assessment, after due notice from the Treasurer, shall cease to be a member. The Treasurer shall give notice of such withdrawals, or discontinuances to the Secretary, who shall erase such members' names from the list.

The attention of Annual Members is particularly called to Section XXIII.

HONORARY MEMBERS.

Members and correspondents of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Information, or any clew to it, is especially desired in regard to Joseph Maxwell, *elected in* 1830, *and* George W. Smith, *elected in* 1851.

Hon. George S. Boutwell, Groton

Clarence H. Clark, Ex-President of the Pennsylvania Horticultural Society, Philadelphia.

Joseph Jefferson, Buzzard's Bay.

Major L. A. Huguet-Latour, M. P., Montreal, Canada.

Sir Trevor Lawrence, President of the Royal Horticultural Society London.

Joseph Maxwell, Rio Janeiro, Brazil.

Donald G. Mitchell, New Haven, Conn.

Baron R. Von Osten Sacken, Heidelberg, Germany.

Samuel B. Parsons, Flushing, N. Y.

Dr. Henry S. Pritchett, President of the Massachusetts Institute of Technology, Boston.

George W. Smith, Boston.

Albert Viger, President of the National Society of Horticulture of France, Paris.

Hon. James Wilson, Secretary of Agriculture, Washington, D. C.

CORRESPONDING MEMBERS.

Members and correspondents of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly reporting to the Secretary the needed corrections.

Information, or any clew to it, is especially desired in regard to Alexander Burton, *elected in* 1829; S. Reynolds, M.D., 1832; *and* Francis Summerest (or Summerer), 1833.

ÉDOUARD ANDRÉ, Editor-in-chief of the Revue Horticole, Paris, France.

GEORGE FRANCIS ATKINSON, Professor of Botany in Cornell University, Ithaca, N. Y.

PROFESSOR L. H. BAILEY, Horticultural Department, Cornell University, Ithaca, N. Y.

JOHN GILBERT BAKER, F. R. S., F. L. S., Kew, England.

CHARLES BALTET, Président de la Société Horticole, Vigneronne, et Forestière de l' Aube, Troyes, France.

PETER BARR, London, England.

ARCHIBALD F. BARRON, Turnham Green, London, W.

NAPOLEON BAUMANN, Bolwiller, Alsace.

D. W. BEADLE, 303 Crawford St., Toronto, Ontario.

PROFESSOR WILLIAM J. BEAL, Agricultural College, Michigan.

PROSPER J. BERCKMANS, Ex-President of the American Pomological Society, Upper Montclair, New Jersey.

CHARLES E. BESSEY, Ph. D., Professor of Botany in the Industrial College of the University of Nebraska, Lincoln.

DR. CH. BOLLE, Berlin, Prussia.

COL. GUSTAVUS B. BRACKETT, Pomologist to the United States Department of Agriculture, Washington, D. C.

PROFESSOR J. L. BUDD, Ames, Iowa.

F. W. BURBIDGE, M.A., Trinity College Botanic Garden, Dublin, Ireland.

ALEXANDER BURTON, United States Consul at Cadiz, Spain, Philadelphia

REV. H. HONYWOOD D'OMBRAIN, Westwell Vicarage, Ashford, Kent, England.

SIR W. T. THISELTON DYER. K. C. M. G., F. R. S., Director of the Royal Botanic Gardens, Kew, England.

PARKER EARLE, President of the American Horticultural Society, Roswell, N. M.

GEORGE ELLWANGER, Rochester, N. Y.

H. J. ELWES, F. R. S., Colesborne, Cheltenham, England.

WILLIAM G. FARLOW, M.D., Professor of Cryptogamic Botany, Harvard University.

B. E. FERNOW, Forestry School, Cornell University, Ithaca, N. Y.

HON. ROBERT W. FURNAS, Ex-President of the Nebraska State Horticultura-Society, Brownville.

BEVERLY T. GALLOWAY, Horticulturist and Superintendent of Gardens and Grounds of the United States Department of Agriculture, Washington, D.C.

CHARLES A. GOESSMANN, Ph.D., LL.D., Chemist of the Hatch Experiment Station of the Massachusetts Agricultural College, Amherst.

GEORGE L. GOODALE, M.D., Professor of Botany, Harvard University, Cambridge.

HENRY H. GOODELL, President of the Massachusetts Agricultural College, Amherst.

OBADIAH B. HADWEN, President of the Worcester County Horticultural Society, Worcester.

PROFESSOR BYRON D. HALSTED, Botanist and Horticulturist at the New Jersey Agricultural Experiment Station, New Brunswick, N. J.

PROFESSOR CARL HANSEN, of the Royal College of Agricqlture, Copenhagen Denmark.

J. H. HART, Superintendent of the Botanic Garden, Trinidad.

DR. F. M. HEXAMER, Editor of the American Agriculturist, New York.

J. W. HOFFMANN, Colored State University, Orangeburg, S. C.

J. C. HOLDING, Ex-Treasurer and Secretary of the Cape of Good Hope Agricultural Society, Cape Town, Africa.

THE VERY REV. S. REYNOLDS HOLE, D.D., Dean of Rochester, Rochester, England.

SIR JOSEPH HOOKER, K.C.S.I., The Camp, Sunningdale, England.

JOSIAH HOOPES, West Chester, Pa.

SIR GEORGE KING, K. C. I. E., M. B., LL. D., F. R. S., Calcutta.

PROFESSOR WILLIAM R. LAZENBY, Department of Horticulture and Forestry; Secretary College of Agriculture and Domestic Science, Ohio State University, Columbus, O.

MAX LEICHTLIN, Baden-Baden, Germany.

VICTOR LEMOINE, Nancy, France.

DR. PETER MACOWAN, Government Botanist, Cape Town Herbarium, Cape Town, Africa.

DR. MAXWELL T. MASTERS, Editor of the Gardeners' Chronicle, London.

GEORGE MAW, Benthal, Kinley, Surrey, England.

T. C. MAXWELL, Geneva, N. Y.

F. W. MOORE, A. L. S., Curator of the Royal Botanic Gardens, Glasnevin, Dublin, Ireland.

DR. DANIEL MORRIS, C.M.G., D.Sc., M.A., F.L.S, Imperial Department of Agriculture, Barbados.

GEORGE NICHOLSON, Kew, England.
PETER NØVIK, Secretary of the Norwegian Horticultural Society, Christiania.
WILLIAM PAUL, Waltham Cross, London, N.
PROFESSOR D. P. PENHALLOW, Director of the Botanic Garden, Montreal, Canada.
P. T. QUINN, Newark, N. J.
CAVALIÈRE ENRICO RAGUSA, Palermo, Sicily.
D. REDMOND, St. Nicholas, Florida.
S. REYNOLDS, M.D., Schenectady, N. Y.
BENJAMIN LINCOLN ROBINSON, Ph.D., Curator of the Gray Herbarium of Harvard University, Cambridge.
WILLIAM ROBINSON, Editor of Gardening Illustrated, London.
WILLIAM SALWAY, Superintendent of Spring Grove Cemetery, Cincinnati, O.
EDGAR SANDERS, Chicago, Ill.
WILLIAM R. SMITH, Superintendent of the Botanic Garden, Washington, D. C.
ROBERT W. STARR, Port William, N. S.
DR. JOSEPH STAYMAN, Leavenworth, Kan.
FRANCIS SUMMERBST.
WILLIAM TRELEASE, Director of the Missouri Botanic Garden, St. Louis.
DR. MELCHIOR TREUB, Director of the Botanic Garden, Buitenzorg, Java.
H. J. VEITCH, Chelsea, England.
WILLIAM WATSON, Curator of Royal Gardens, Kew, England.
PROFESSOR L. WITTMACK, Secretary of the Royal Prussian Horticultural Society, Berlin, Prussia.

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TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1903.

PART I.

BOSTON:
PRINTED FOR THE SOCIETY.
1903.

TRANSACTIONS

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Massachusetts Horticultural Society

FOR THE YEAR 1903.

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The following lectures have been circulated to some extent in the form of slips reprinted from the reports made by the Secretary of the Society in the "Boston Evening Transcript." As here presented, the lectures are, as far as possible, printed in full, and reports of the discussions following the lectures are added, these, where it appeared necessary, having been carefully revised by the speakers.

The Committee on Lectures and Publication take this opportunity to repeat what they have before stated, that the Society is not to be held responsible for the certainty of the statements, the correctness of the opinions, or the accuracy of the nomenclature, in the lectures and discussions now or heretofore published, all of which must rest on the credit or judgment of the respective writers or speakers, the Society undertaking only to present these papers and discussions, or the substance of them, correctly.

AARON LOW,
J. H. BOWDITCH,
E. W. WOOD,
} *Committee on Lectures and Publication.*

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, January 3, 1903.

A duly notified stated meeting of the Society was held to-day at eleven o'clock. President HADWEN presided and there were seventy members present.

The President announced, that in view of the large amount of business to be transacted, he would defer his annual address to another occasion.

The Executive Committee reported the recommendation of the following appropriations for the year 1903:

For Prizes and Gratuities,	
Committee on Plants	$1,500.00
" " Flowers	1,875.00
" " Native Plants	125.00
" " Fruits	1,275.00
" " Vegetables	900.00
" " Gardens and Greenhouses	375.00
Total	$6,050.00
For the Committee on School Gardens and Children's Herbariums, for Prizes $100 for incidental expenses 50	$150.00
For the Committee on Library, this sum to include the income of the French and Farlow Funds	525.00

For the Committee of Arrangements, this sum to include all extraordinary expenses . . .	225.00
For the Committee on Forestry and Roadside Improvement	110.00
For the Committee on Lectures and Publication, this sum to include the income of $50 from the John Lewis Russell Fund	200.00
For the salary of the Treasurer and Superintendent of the Building	1,200.00
For the salary of the Secretary and Librarian .	1,500.00

These appropriations were unanimously voted.

The Executive Committee also reported the appointment of Charles E. Richardson as Treasurer and Superintendent of the Building, and of William P. Rich as Secretary and Librarian for the year 1903.

Henry L. Clapp, Chairman of the Committee on School Gardens and Children's Herbariums, presented a summary of the annual report of that committee.

The report was accepted and referred to the Committee on Publication.

Walter S. Parker, Chairman, read the annual report of the Library Committee which was accepted and referred to the Committee on Publication.

The annual reports of the Chairmen of the Committees on Native Plants, Arrangements, Lectures and Publication, Forestry and Roadside Improvement, and of the Inspector to the State Board of Agriculture were offered and, without reading, were accepted and referred to the Committee on Publication.

Dr. Henry P. Walcott, Chairman of the committee appointed July 5, 1902, to revise and amend the Constitution and By-laws now governing the Society, presented to the meeting the report of that committee.

The report, which was in print, contained the Charter of the Society, the several amendments thereto, and a proposed new code of By-laws.

In his preliminary remarks, the Chairman of the committee stated, that by advice of eminent counsel, it had been decided that the Charter required the election by the Society at large of a Treasurer and a Secretary, instead of their appointment by the Executive Committee as heretofore practiced.

The proposed new By-laws were then read in full by the Secretary of the committee on revision, John K. M. L. Farquhar, as follows:

BY-LAWS

OF THE

MASSACHUSETTS HORTICULTURAL SOCIETY.

PRELIMINARY.

These By-laws shall, except as hereinafter provided, go into effect on the morning of the first day of January, 1904.

The officers of the Society provided for in Section I. of these By-laws, other than the Delegate to the State Board of Agriculture, whose terms shall begin on the first day of January, 1904, shall be elected at a meeting of the Society to be held on the second Saturday after the first Monday of November, 1903.

The present Delegate to the State Board of Agriculture elected at the meeting held on the first Saturday of October, 1902, to serve for three years, shall hold office until the first day of January, 1906, and his successor shall be elected at the annual meeting of the Society to be held in November, 1905. Appropriations for prizes and gratuities to be awarded in the year 1904 shall be made at said meeting to be held on the second Saturday after the first Monday in November, 1903, on the recommendation of the existing Executive Committee; but no other appropriations shall be then made calling for any disbursements after the first day of January, 1904.

The ballots for such election shall be printed by the Secretary, and the names of candidates nominated for each office shall be printed thereon in alphabetical order, and the voting shall be as provided in Section XV. of these By-laws.

Nominations for officers to be elected at said meeting to be held on the second Saturday after the first Monday in November, 1903, shall be made as provided in Clause 2 of Section XIV. of these By-laws, and in no other manner; and the Secretary shall, immediately on receiving them, post such nominations in some public place in the Society's building. The Secretary shall also send a notice of said meeting to every member of the Society, as provided in Section I. of these By-laws.

No officer of the Society, professor, or member of any board or of any committee, shall be elected or appointed until said meeting, for a period expiring later than the 31st of December, 1903; and the existing Constitution and By-laws are hereby amended or repealed, so far as may be necessary to make this section effectual.

SECTION I.

MEETINGS.

The annual meeting of the Society for the transaction of business and for the election of officers, — namely, a President, two Vice-Presidents, a Treasurer, a Secretary, a Delegate to the State Board of Agriculture, a Board of Trustees, and a Nominating Committee, — shall be held on the second Saturday after the first Monday in November, and the officers elected shall enter upon their duties on the first day of January ensuing.

In addition to the annual meeting there shall be held a meeting at noon on the first Saturday in January in each year to be called the inaugural meeting, at which the President shall make an inaugural address, and the Treasurer and Secretary, whose terms of office expired on January first preceding, the Board of Trustees, the Library Committee, the Committee on Lectures and Publications, and every existing committee appointed by the Board of Trustees under the provisions of clause (8) Section IX. of the By-laws shall each make a report to the Society for the preceding year. No business except the hearing of such address and the acceptance or rejection of such reports shall be transacted at the inaugural meeting.

Special meetings of the Society may be called by order of the President, or by any five of the Board of Trustees, or upon request of fifteen members of the Society.

A notice of each meeting and of every adjourned meeting shall be mailed by the Secretary to each member at his last address appearing on the records of the Secretary at least ten days prior to the meeting; and the notice of a special meeting shall specify the business to be considered at such meeting, which shall be proposed as provided in Section II., and no business other than that specified shall be transacted thereat, and no new business shall be transacted at any adjourned meeting.

Thirty members shall constitute a quorum at any meeting of the Society.

SECTION II.

POWERS RESERVED TO THE SOCIETY.

The Society may, except as herein provided, by vote of its members, at any annual meeting or special meeting called as provided by Section I., transact any business lawful under its Charter and By-laws; may instruct the Trustees and other officers of the Society; and the vote of the Society shall supersede the action of any of its officers; provided, however, that acquired rights of third parties shall not be thereby impaired. No vote calling for any appropriation of money or any sale or conveyance of any of the Society's property shall be valid without the approval of the Board of Trustees, except that the Society may, by a vote of a majority of all its members, authorize such sale or conveyance of the real estate belonging to the Society without the approval of the Board of Trustees.

The Trustees, or any five of them, or any fifteen members of the Society, may propose business to be considered at any special meeting, of which proposed business notice shall be given as provided in Section I. No sale of the Society's real estate, and no expenditure or contract therefor amounting to more than five thousand dollars for any one purpose, shall be valid and binding on the Society unless authorized by a vote of the Society.

SECTION III.

OFFICERS.

The officers of the Society shall consist of a President, two Vice-Presidents, a Treasurer, a Secretary, a Delegate to the State Board of Agriculture, a Board of Trustees of fifteen members, a Nominating Committee of five members, and such other officers and committees as the Board of Trustees shall appoint, according to Section IX.: provided, however, that no person shall be eligible to any office unless he shall have been a member of the Society for two years preceding.

SECTION IV.

THE PRESIDENT.

The President shall be elected annually by the Society, and shall be *ex officio* a member of the Board of Trustees. His duties shall be to preside at the meetings of the Society and of the Board of Trustees; to preserve order; to state the business before the meeting; to state and put questions; and, in the case of an equal division on any question, to give the casting vote; and to call for accounts and reports from all committees.

SECTION V.

THE VICE-PRESIDENTS.

There shall be two Vice-Presidents, who shall, except as provided in Section X., be elected by the Society on alternate years, and shall serve two years. In the absence of the President, the senior Vice-President present shall exercise all the authority, privileges, and powers of the President; and, in case neither the President nor either Vice-President shall be present at any meeting, the meeting shall choose a President *pro tempore*, who shall be invested with all the powers and authority of the President.

SECTION VI.

THE TREASURER.

The Treasurer shall be elected annually by the Society, and shall have the following powers and duties: —

(*a*) He shall have charge of the funds of the Society, and shall deposit the same in such bank or trust company as the Board of Trustees shall direct, where his account as Treasurer shall be kept; and all payments shall be made by check.

(*b*) He shall attend to the renting of the Building and the collection of the rents and other income of the Society.

(*c*) He shall pay prizes and gratuities upon the written order of the Board of Trustees or the chairman of any committee authorized by said Board to give such order, and shall pay no bills until audited by an officer designated by the Board of Trustees.

(*d*) He shall have the care and custody of the seal of the Society and of the dies for the medals; and he shall cause the medals to be struck and certificates of merit to be prepared, when required, and shall deliver them as awarded.

(*e*) He shall have in his safe keeping the bonds, deeds, notes, certificates of stock, and other evidences of property, unless the Board of Trustees shall otherwise direct.

(*f*) He shall, unless the Board of Trustees shall otherwise order, make all transfers and investments, with the consent and approval of the Board of Trustees.

(*g*) He shall pay the taxes, insurance, interest on loans, and other debts, and keep correct account of the receipts and disbursements of the Society.

(*h*) He shall, in January of each year, send to every annual member a bill of the amount due from him.

(*i*) He shall, as early in the year as possible, present to the Board of Trustees a full statement of receipts and expenditures for the preceding year. The fiscal year shall commence on the first day of January, and all

assessments for the ensuing year shall be due at that time. He shall annually make a report to the society at the inaugural meeting at the close of his term of office.

(*j*) He shall give bond for the faithful performance of his duties in such sum and with such sureties as shall be approved by the Board of Trustees.

(*k*) He shall not make or issue any note or other negotiable instrument unless expressly authorized in each case so to do by the Board of Trustees who shall in each case in their vote containing such authorization provide that such note or other obligation shall not be valid or binding on the Society until countersigned by some person designated in such vote: provided, however, that he may be given authority by a general vote of the Board of Trustees to draw checks on the funds of the Society on deposit, as provided in Clause (*a*) of this Section VI.

He shall, in the discharge of all his duties, be subject to the control of the Board of Trustees.

SECTION VII.

THE SECRETARY.

The Secretary shall be elected annually by the Society. He shall conduct the correspondence of the Society, and shall keep copies of the same in a book provided for the purpose which shall be open to the inspection of the members at any meeting. He shall receive and read all letters and papers addressed to the Society, and shall dispose of them as provided by the By-laws or directed by the Society or by the Board of Trustees. He shall regularly record the proceedings at every meeting and every adjourned meeting of the Society in a book to be kept for that purpose. He shall call special meetings of the Society when ordered or requested, as provided in Section I.

He shall give notice to each person of his election to office or membership in the Society. He shall record the election of every member, and report his name and residence to the Treasurer. He shall deliver to the Board of Trustees a copy of the proceedings of each meeting, whenever requested, and shall prepare and countersign all diplomas or certificates of membership.

He shall prepare for each annual election an alphabetical list of the members of the Society.

He shall, under the direction of the Committee on Lectures and Publications, act as editor of the publications of the Society, prepare them for the press, and superintend the printing thereof. He shall make notes, for publication, of meetings for discussion of horticultural subjects, and shall perform such other literary work as may be directed by the Society or the Board of Trustees, or as may not be otherwise provided for.

In the absence of the Secretary at any meeting the President shall appoint a Secretary *pro tempore*.

SECTION VIII.

DELEGATE TO THE STATE BOARD OF AGRICULTURE.

The term of office of the Delegate to the State Board of Agriculture shall be for three years, and he shall be chosen at the annual meeting whenever his term of office is about to expire.

SECTION IX.

BOARD OF TRUSTEES.

The Board of Trustees shall consist of fifteen members, including the President and the two Vice-Presidents, who shall be members of the Board *ex officiis*. Four members in addition to the President and one Vice-President shall be chosen each year, except as provided in Section X., and shall serve for the term of three years.

The Board of Trustees shall hold stated meetings on the first Saturdays of January, April, and October in each year. Special meetings of the Board may be called by the President or by a call signed by any two members of the Board on at least three days' notice, which may be given by mail at the last address of the member so notified appearing on the records of the Secretary. This notice may be waived in writing. Eight members of the Board shall constitute a quorum thereof.

In the absence of action by the Society as provided in Section II., the Board of Trustees shall have and exercise the following powers and duties:—

(1) They shall have general charge and direction of the business of the Society.

(2) They shall have the care and management of the Society's real estate, and may lease the same, or any part thereof, and make all necessary repairs; but no sale of the Society's real estate, except sales of shares in real estate trusts, so called, held by the Society as part of its invested funds, shall be valid without a vote of the Society authorizing such sale.

(3) They shall have the care and management of the Society's invested funds and other personal property, with power to invest, reinvest, and transfer the same in their discretion, or they may authorize and approve transfers and investments made by the Treasurer, as provided in Section VI. They shall have the care of all stocks, bonds, and other personal property of the Society, but may leave the custody of the same in the Treasurer, as provided in Section VI; and they shall annually audit, or cause to be audited, the Treasurer's accounts.

(4) They shall consider and pass upon all questions of the appropriation of money, and shall, at the annual meeting, recommend to the Society the amount to be appropriated for prizes and gratuities and such other appro-

priations as they may deem advisable during the ensuing year. They may, however, subject to the provisions of Section II., make such additional appropriations for the purposes of the Society as they deem proper.

(5) They shall appoint the following committees: a Finance Committee, a Library Committee, and a Committee on Lectures and Publications. The members of the Finance Committee shall all be members of the Board of Trustees. The members of the Library Committee and the Committee on Publications need not all be members of the Board of Trustees.

(*a*) *The Finance Committee.* — The Finance Committee shall, except as herein provided, have and enjoy all powers and duties given by this Section IX. to the Board of Trustees in relation to the care and management of the Society's property, real and personal, other than its Library.

(*b*) *The Library Committee.* — The Library Committee shall, except as herein provided, have all powers given by this Section IX. to the Board of Trustees in relation to the care and management of the Library of the Society.

(*c*) *The Committee on Lectures and Publications.* — The Committee on Lectures and Publications shall superintend all publications of the Society and have the direction in each year of six or more lectures and essays on horticultural subjects, including that provided for by the John Lewis Russell Fund.

In addition to these committees the Board of Trustees may appoint such other committees from among their number as they see fit, and may delegate to such committees any of their powers; but no expenditure or contract for expenditure exceeding five hundred dollars at any one time, and no appointment of committees or officers of the Society, and no election of members thereto, shall be valid or binding without the action of a majority of the full Board of Trustees at a legal meeting.

Any powers given to any committee by the provisions of this clause (5) and any powers delegated to any such committee by special vote of the Board of Trustees, may be withdrawn or limited by vote of said Board at any subsequent time. The Board may at any time remove any or all of the members of any such committee, and substitute others in their places.

(6) They shall appoint a Superintendent of the Building and a Librarian of the Society, and define their duties, except when these are determined by the By-laws, and may remove them or either of them, and appoint others in their stead, whenever, in their opinion, the interests of the Society shall require it. They may employ such additional assistants as they deem best, and shall determine the compensation of all officers and agents of the Society.

(7) They shall arrange for six or more exhibitions of flowers, plants, fruits, and vegetables in each year, and shall have the entire charge of all arrangements for conducting the same.

(8) They shall appoint each year the following standing committees, the members of which need not be members of the Board of Trustees: (*a*) on

plants and flowers; (*b*) on fruits; (*c*) on vegetables. Each of these committees shall consist of three or more members. They shall also appoint each year a standing committee of five or more members on gardens. The President shall be one of this committee *ex officio*. In addition to the standing committees named in this Clause (8) the Board of Trustees may appoint such additional committees as may be required for conducting special exhibitions and for awarding prizes, and may, in their discretion, appoint persons from outside the membership of the Society to act as judges to award prizes either alone or in conjunction with any committee.

The Board of Trustees may delegate appropriate powers to any of the committees appointed under this Clause (8), excepting the power to appropriate money or to dispose of property of the Society. They may at any time revoke powers so delegated, and may at any time, in their discretion, remove any member of any such standing committee and substitute any other in his place.

SECTION X.

FIRST ELECTION OF VICE-PRESIDENTS AND BOARD OF TRUSTEES.

At the first meeting at which officers are to be elected, two Vice-Presidents shall be chosen, one to hold office until the qualification of his successor chosen at the annual meeting in November, 1904, and one to hold office until the qualification of his successor chosen at the annual meeting in November, 1905.

There shall also be chosen at said meeting twelve members of the Board of Trustees in addition to the President and two Vice-Presidents, so that the total number of said Board shall be fifteen. Four of said Trustees, other than the President and Vice-Presidents, shall be elected to and shall hold office until the qualification of their successors chosen at the annual meeting in November, 1906; four shall be elected to and shall hold office until the qualification of their successors chosen at the annual meeting held in November, 1905; and the remaining four shall be elected to and shall hold office until the qualification of their successors chosen at the annual meeting held in November, 1904.

SECTION XI.

THE LIBRARIAN.

The Librarian shall have charge of all books, drawings, engravings, herbariums, and other articles appertaining to the Library, and shall attend to the purchase, recording, cataloguing, arranging, binding, delivering, and receiving of books: these duties to be performed under the direction of the Board of Trustees or other committee thereof duly authorized or of the Library Committee. He shall as far as possible, assist those desiring to use the Library in their investigations.

SECTION XII.

THE SUPERINTENDENT OF THE BUILDING.

The Superintendent of the Building shall under the general direction of the Board of Trustees, or the Finance Committee, or other committee thereof duly authorized, or under the direction of the Treasurer, if the Board of Trustees shall so vote, have charge of the premises, and shall see that they are kept clean and in good repair, and that all Rules and Regulations in regard to their care are strictly enforced.

SECTION XIII.

VACANCIES.

Whenever a vacancy occurs in any office of the Society, such vacancy shall be filled by the Board of Trustees until the next annual meeting, when candidates shall be nominated as provided by these By-laws to fill the remaining term, if any, for which the vacancy exists.

SECTION XIV.

NOMINATING COMMITTEE.

(1) A Nominating Committee of five members shall be elected by the Society at its annual meeting. Said committee shall nominate at least twice the number of candidates required to fill each office of the Society. Said committee shall file such nominations with the Secretary at least one month before the annual meeting. The Secretary shall, immediately on receiving such nominations, post the same in some public place in the Society's Building.

(2) Nominations for any office, in addition to those made by the Nominating Committee, may be made, by papers signed by fifteen or more members of the Society, and deposited with the Secretary at least two weeks before the annual meeting. The Secretary shall, immediately on receiving such nominations, post the same in some public place in the Society's Building.

(3) The Secretary shall have the ballots printed under direction of the Nominating Committee. Each ballot shall state the number to be elected for each office and the names of candidates for each office shall be printed in alphabetical order. If any ballot is marked for more than the required number, the ballot shall be declared void as a vote for that office for which the excessive number is marked. Only such candidates shall be voted for as shall have been nominated as above provided in clauses (1) and (2) of this section.

SECTION XV.

VOTING.

All elections of the Society shall be by Australian ballot; and the polls shall be continuously open between the hours of twelve noon, and four in the afternoon on the day of the annual meeting.

The President or presiding officer shall appoint a committee of three to receive, assort, and count the votes given, and report the number. A plurality shall elect, and the President shall declare who are elected.

Voting by proxy shall not be allowed at any meeting.

SECTION XVI.

MEMBERSHIPS.

Any member may propose candidates for life or annual membership to the Board of Trustees. Such proposal shall be in writing and shall be accompanied by a statement of the qualifications of such candidate for membership. On any candidate being so proposed, said Board shall cause his name and the name of the member proposing him to be posted for at least one month in some public place in the Society's Building. During said month any member may file with the Secretary a written protest against the election of said candidate, and no candidate shall be eligible against whom thirty or more such protests have been so filed. At the first meeting of the Board of Trustees held after the expiration of the month during which the name of the candidate has been so posted, his name shall be voted on by such Board; and he shall be elected by a majority of the full number of such Board so voting. The candidate so elected shall qualify himself for membership within six months from the date when notice of his election is given him, or his election shall be void.

LIFE MEMBERS.

A payment of thirty dollars shall constitute a life membership, and exempt the member from all future assessments; and any annual member, having paid all dues, may become a life member by the payment of twenty dollars in addition thereto.

ANNUAL MEMBERSHIP.

Every annual member, before he receives his diploma or exercises the privileges of a member, shall pay the sum of ten dollars as an admission fee, and shall be subject afterwards to an annual assessment of two dollars.

PRIVILEGES.

Each member of the Society shall be entitled to the following privileges: —

1. To be present and vote at all the meetings of the Society.

2. To have personal access to the Library, and to consult any of the periodicals, books, or plates, or to examine any of the models belonging to the Society, under rules established by the Board of Trustees.

3. To have free admission to all the exhibitions of the Society, for himself and his immediate family.

4. To receive all the publications of the Society under rules established by the Board of Trustees.

SECTION XVII.

WITHDRAWAL OR DISCONTINUANCE OR EXPULSION OF MEMBERS.

Any member may cease to be a member by giving notice to that effect to the Secretary and paying the amount due from him to the Society. Any member who shall neglect for the space of two years to pay his annual assessment, after due notice from the Treasurer, shall cease to be a member. The Treasurer shall give notice of such withdrawal or discontinuance to the Secretary, who will erase such members' names from the list.

If any member shall dishonor the Society, or shall be guilty of any breach of good faith thereto, he may be expelled at any meeting of the Society, two-thirds of the members present voting therefor. But no member shall be expelled unless a written notice of the motion be served by the Secretary upon him personally, or left at his last or usual place of abode, at least twenty days before it is acted upon.

SECTION XVIII.

HONORARY AND CORRESPONDING MEMBERS.

The Society may, upon recommendation of the Board of Trustees, elect Honorary and Corresponding Members at any annual or special meeting, to each of whom the Secretary shall submit a Diploma or Certificate of Election, under the seal of the Society, signed by the President and countersigned by the Secretary; and such members shall not be entitled to hold office or to vote at any meeting.

SECTION XIX.

PRIZES AND GRATUITIES.

Prizes and gratuities may be awarded by the Board of Trustees, or by such committees or judges as may be appointed by them for such purpose,

to any person for the exhibition of any fruits, plants, flowers, or vegetables, either new of their kind or of uncommon excellence; or for any new and successful method of cultivating any variety of fruits, flowers, plants, trees, shrubs, or vegetables; or for any other object immediately connected with horticulture; or for the essential advancement of the objects of the Society in any other way. But no gratuity shall be awarded for any object which shall have been entered or exhibited for a prize. No award shall be made for any unworthy exhibit, and no gratuity given shall be of a larger amount than the lowest price established for the same exhibit.

SECTION XX.

AMENDMENTS.

Amendments to the By-laws may be proposed in writing by any member of the Society to the Board of Trustees at any meeting of the Board of Trustees held at least two months before the next annual meeting of the Society, and, on being approved by a majority of the Board, shall be filed with the Secretary in their original form or as amended at least thirty days before such annual meeting, and shall subsequently be submitted to such annual meeting; or any thirty members may propose amendments to be acted upon at any annual meeting of the Society, without the approval of the Board of Trustees, by filing the amendments in writing with the Secretary thirty days at least before such annual meeting. The vote on each amendment shall be "Yes" or "No."

The Secretary shall, at least three weeks before the meeting at which the same are to be considered, mail a copy of every proposed amendment to each member of the Society at his last address appearing on the records of the Secretary.

All amendments proposed shall be printed on one ballot, with a space for voting "Yes" or "No" opposite each amendment, thus:—

If you wish the amendment adopted, put a cross under "Yes." If not, under "No."	YES.	NO.
(Here the subject of the amendment.)		

Any amendment shall be adopted if it receives two-thirds of the votes cast. The polls shall remain open for the purpose of voting on any proposed amendments between the hours of noon and four in the afternoon, and the voting shall be by Australian ballot.

President Hadwen announced, that in accordance with the existing By-laws, a second reading was in order.

On motion of Dr. Walcott it was unanimously voted that the second reading of the proposed new By-laws be by title.

Mr. Farquhar then offered the second reading of the Proposed new By-laws as follows:

BY-LAWS
OF THE
MASSACHUSETTS HORTICULTURAL SOCIETY.

William C. Strong offered the following amendment, "Amend Section IX in clause (c) in the fourth line by substituting the word 'such' for the words 'six or more' and close the clause by the addition of the words "as may seem to the committee to be expedient."

Mr. Strong's amendment, which was read twice by Mr. Farquhar, was unanimously adopted.

Mr. Farquhar moved the following amendment, "that the word 'prize' be substituted for the word 'price' in the last line of Section XIX."

This amendment was read twice and unanimously adopted.

On motion of Benjamin P. Ware it was unanimously voted that the proposed new By-laws be accepted and entered upon the records of the Society and lie over for consideration at the next quarterly meeting in April.

The following named candidates having been recommended by the Executive Committee were, on ballot, elected to membership in the Society:

DANIEL SMILEY, of Mohonk Lake, N. Y.
MISS HARRIET E. FREEMAN, of Boston.
H. L. FROST, of Arlington.
JOHN L. CHAPMAN, of Hingham.

At this point in the meeting President Hadwen retired, calling Vice-President Ware to the Chair.

On motion of William H. Spooner it was voted that when this meeting adjourns it be to Saturday, February 7.

A communication was read from James Sturgis Pray, Chairman of the Committee on Forestry and Roadside Improvement, reporting the resignation of Harvey N. Shepard of that committee and suggesting the appointment of James H. Bowditch.

It was voted that the resignation of Mr. Shepard be accepted and that Mr. Bowditch be elected to fill the vacancy.

The Vice-President announced that the Schedule of Exhibitions for 1903 and the Program of Lectures were ready for distribution.

Adjourned.

WILLIAM P. RICH,
Secretary.

BUSINESS MEETING.

SATURDAY, February 7, 1903.

An adjourned meeting of the Society was held to-day at eleven o clock. President HADWEN presided and there were twenty members present.

Thomas Harrison moved that the Committee on Lectures and Publication be paid for their services on the same basis as other Standing Committees. The motion was favorably discussed by Benjamin P. Ware, Michael Sullivan, John L. Bird, and Aaron Low.

William H. Spooner moved an amendment, that the Chairman of the Committee on Lectures and Publication be paid a certain sum, equal to that paid to the chairmen of the other committees, and the motion as amended was adopted.

Aaron Low, Chairman of the Committee appointed to prepare a memorial of the late Lamont G. Burnham, reported as follows: —

In Memory of Lamont G. Burnham.

Mr. President:

Again we are called upon to place upon our records the death of a member of our Society, adding another name to that ever increasing list of those who have passed from this to the higher life.

Lamont Giddings Burnham was born in Essex, Massachusetts, August 15, 1844, and died September 25, 1902. As a boy he attended the district schools and afterwards the Putnam High School at Newburyport. It was while attending the latter school, at the age of seventeen, that he enlisted in Company E, Forty-eighth Regiment, M. V. M., and served with credit until the term of his enlistment expired. Later he served in Company F, Third Regiment, M. V. M., until the close of the war. At the reorganization of the Massachusetts Volunteer Militia, he was appointed by General Isaac S. Burrill, Commander of the first Brigade, as Quarter-master; afterwards as Provost-Marshal, in which capacity he served five years. A year later he was elected Captain of Troop D, First Battalion of Cavalry, resigning after two years' service.

His business career commenced in 1865, when he entered the employ of Batchelder Brothers as a clerk. He remained with them until 1868 when he entered into partnership with Charles F. Newell, under the firm name of Newell & Burnham, succeeding to the coal business of William Wood & Company, No. 132 Charles Street. This partnership continued until 1871 when Mr. Newell retired. The firm then assumed the name of L. G. Burnham and Company, and in 1898 consolidated with five other firms, forming the Metropolitan Coal Company, Mr. Burnham being the first president. He retired from the coal business in 1899.

He then accepted the position of vice-president of the United Fruit Company, which office he held until he retired from business on account of ill health.

Mr. Burnham was very active in different social organizations, filling the office of president of the Boston Chamber of Commerce, Boston Associated Board of Trade, and the Boston Coal Club. He was also an active member of the Merchants' Association, and of the Commerce, Algonquin, and Country Clubs. He was appointed by Mayor Quincy a trustee of the City Hospital, which office he held at the time of his death. He was a member of Washington Lodge, Free and Accepted Masons of Roxbury, and an active worker in the Second Church. In politics he was a Republican.

Mr. Burnham was married in 1881 to Mrs. Mary E. Wood, of Lowell, Mass., who survives him. He resided on Bay State Road, and his summers were spent at his extensive farm in Essex, in the improvement of which he was much interested, setting out fruit trees and beautifying it with shrubs and flowers. The day before his death he drove twenty miles to procure ornamental shrubs to further beautify it.

From the very intimate relations with him during his army life the writer came to know him as a man of unblemished honor and of strict integrity. He was of a very pleasant personality, and as a soldier ever ready to do his whole duty though surrounded by perils and danger.

Resolved, that we deeply mourn the death of Mr. Burnham and extend to his family our heartfelt sympathy, and that this memorial be placed upon the records of our Society and that a copy be sent to his widow, and to his aged father.

AARON LOW,
BENJ. P. WARE,
H. G. JORDAN,
Committee.

On motion of Thomas J. Grey it was voted that the memorial be accepted and entered upon the records of the Society.

The President appointed the following members a Committee on School Gardens and Children's Herbariums for the current year:

HENRY L. CLAPP, *Chairman.*
W. E. C. RICH, *Secretary.*
MRS. H. L. T. WOLCOTT,
MISS KATHARINE W. HUSTON,
CHARLES W. JENKS,
HENRY S. ADAMS,
WM. P. RICH.

On motion of Mr. Spooner it was voted that when this meeting adjourns it be to the first Saturday in March.

The following named candidates, having been duly recommended by the Executive Committee were, on ballot, elected to membership in the Society:

CHARLES M. LIBBY, of Medford.
DAVID LUMSDEN, of Jamaica Plain.
ALEXANDER CARR, of Pride's.
H. H. ROGERS, of Fairhaven.
B. VAN HERFF, of New York City.
PROF. F. A. WAUGH, of Amherst.

William N. Craig referred to the recent death of two members of the Society, Mrs. F. L. Ames and Frederick L. Harris, and it was voted that committees be appointed to prepare suitable memorials.

The President appointed as a committee to present a memorial of Frederick L. Harris, William N. Craig, Thomas J. Grey, and Joseph H. Woodford.

The committee to prepare a memorial of Mrs. F. L. Ames he would announce at another time.

The meeting was then adjourned.

WILLIAM P. RICH,
Secretary.

BUSINESS MEETING.

SATURDAY, March 7, 1903.

An adjourned meeting of the Society was held to-day at eleven o'clock. President HADWEN presided and there were twenty-four members present.

The President appointed as a committee to prepare a memorial of the late Mrs. F. L. Ames, Dr. Henry P. Walcott, Gen'l. Francis H. Appleton, and William H. Spooner.

The Treasurer's Report for the year 1902 was read by Charles E. Richardson, Treasurer, and on motion of Mr. Spooner, it was voted that it be accepted and referred to the Committee on Publication.

The following named candidates, having been duly recommended by the Executive Committee were, on ballot, elected to membership in the Society:

HENRY J. THAYER, of Boston.
RUSSELL ROBB, of Concord.
HOWARD WILLIS PRESTON, of Providence, R. I.
JUDGE SAMUEL R. CUTLER, of Revere.
WALTER D. ROSS, of Worcester.
ABEL S. WOLFE, of Auburn.
J. LEWIS ELLSWORTH, of Worcester.

William N. Craig, Chairman of the committee to prepare a memorial of the late Frederick L. Harris, reported as follows:

In Memory of Frederick L. Harris.

Frederick L. Harris of Wellesley, Massachusetts, whose death occurred on January 11, at the advanced age of eighty-one years, was of English parentage and, after receiving a first class training at some of the best establishments in Great Britain, came to America at the age of twenty-eight.

He first settled at St. John, N. B., where he remained about three years, coming in 1853, to be head gardener to the late H. Hollis Hunnewell of Wellesley, surviving his employer by a few months only.

For the long period of forty-six years, Mr. Harris coöperated and worked indefatigably with Mr. Hunnewell in the establishment of the beautiful estate at Wellesley, which has no superior on this continent, and with which the name of our departed brother will long be identified.

As an all round practical gardener Mr. Harris stood in the front rank of his profession, and his skill as a cultivator was attested by the numerous medals, certificates, and other premiums, won before the Massachusetts Horticultural Society, during a long term of years.

He was for thirty-seven years a member of the Massachusetts Horticultural Society, joining in 1865, and the services he rendered to the Society during his life time, and to the cause of American horticulture generally can hardly be estimated.

He stood for everything that was elevating and noble in horticulture. His extreme modesty, his earnest sympathy for those struggling to rise in their calling, and his always warm-hearted welcome to visitors, endeared him to all who knew him, while the stimulus he gave to those who were favored to work under him, and with whom he was constantly thrown in contact, can hardly be estimated.

The weight of advancing years caused Mr. Harris to release his charge of the Wellesley estate about two and one half years ago and to seek a well earned rest. His death occurred after a somewhat lingering illness, borne with his usual exemplary patience, and the gathering of friends from far and near when he was taken to his last resting-place, attested to the universal esteem in which he was held.

Resolved, that in the death of Frederick L. Harris, the Massachusetts Horticultural Society and American horticulture have lost a stalwart friend, who ever labored diligently for the upbuilding of his profession.

Resolved, that this Society extends its sympathy to the family of the deceased, and that a copy of these resolutions be forwarded to his family, and spread upon the records of the Massachusetts Horticultural Society.

William N. Craig,
Thos. J. Grey,
Jos. H. Woodford,
Committee.

On motion of Mr. Spooner it was voted that the resolutions be adopted.

On motion of Kenneth Finlayson, it was voted that a committee of three be appointed to draw up resolutions in memory of the late Benjamin Grey of Malden. The President appointed as the committee, Kenneth Finlayson, Patrick Norton, and David F. Roy.

On motion of Mr. Spooner the meeting was dissolved.

WILLIAM P. RICH,
Secretary.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 10, 1903.

A meeting for Lecture and Discussion was held to-day at eleven o'clock. President HADWEN presided and the following lecture was delivered:

REMUNERATIVE OUTDOOR OCCUPATIONS FOR WOMEN.

BY MISS MARY E. CUTLER, WINTHROP GARDENS, HOLLISTON, MASS.

It is a matter of common remark that the second half of the past century has witnessed a tremendous extension of the sphere of women's work.

While clerical and stenographic employment on the one hand and factory labor on the other have furnished the chief fields for this extension, still, almost every department of business has experienced the infusion of the new element, even the professions opening their doors, and women doctors, lawyers, and clergymen becoming by no means uncommon.

Agriculture is no exception to the rule.

The world has not heard so much about the woman farmer,

but she exists and flourishes, indeed, is increasing and multiplying upon the face of the earth.

The violent manual labor involved in field work possesses no attraction for American women; but in many branches of farming, horticulture, floriculture, poultry raising, etc., women occupy a large portion of the opening.

Fifty years ago no occupations were open to them except cooking, sewing, teaching, and factory work. Few women were sufficiently educated to teach. Those who were, received from four to eight dollars a month and "boarded 'round," while men for the same service were given thirty dollars a month and board. In that day not even woman herself had so much as a dream of entering the professions of law, medicine, and theology.

When the genius of Harriet Hosmer impelled her to take up sculpture, she traveled from one end of the country to the other, begging for an opportunity to make the necessary study of anatomy.

When Elizabeth Blackwell determined to consecrate her life to medicine, not one of the standard medical colleges would admit her as a student, and society ostracized her.

The close of the nineteenth century found every trade, vocation, and profession open to women, and every opportunity at their command, for preparing themselves to follow these occupations.

A vast amount of the household drudgery that once monopolized the whole time and strength of the mothers and daughters, has been turned over to machinery; a money value is placed upon the labor of women.

Woman is no longer compelled to marry for support. In the world of literature and art women divide honors with men, and the civil service rules have secured for them thousands of remunerative positions under the Government.

What the woman of the twentieth century will be, I cannot say; one hundred years with the greater equality, the richer opportunities certain to come, will make her a being as much nobler, higher, and more gifted with every power for good, as the woman of today is superior in these qualities to her sister of a century ago.

Perhaps no department is better suited to woman's work than is that commonly known as glass farming, which is especially adapted to her for several reasons. First, it necessitates careful advance calculation, a matter in which women excel. Second, the physical labor involved is comparatively light, and so fitted to one whose strength is not robust. Third, in it there is room for much artistic taste and discrimination, certainly woman's specialties.

Glass farming, that is the use of plant houses, greenhouses, pits, frames, etc., is an ancient idea. We find mention of it in the Latin writers of the first century, Martial, Columella, and Pliny, and we have no reason to think that this was the beginning. But until recent years, glass farming has been regarded as a mere luxury, a pastime for the wealthy, rather than a practical method of supplying the world with necessaries. During the very years, however, in which women were entering the field of industry, this conception changed, and for the first time glass farming began to be regarded seriously as a department of agriculture.

Raising flowers in greenhouses for market is a profession for which women are proving themselves especially adapted. It is a business that has to be learned like any other; but, given a little experience, added to natural qualifications, such as perseverance, energy, and common sense, success is sure to follow. The plant I own and am running, was started on two hundred and fifty dollars, and I have built up a large, well paying business. With $250 and an acre of land, a practical woman in good health can earn a living for herself from the beginning and keep enlarging her plant all the time besides.

Given an acre of land, the first requisite is, of course, a greenhouse; a modest one can be built for one hundred dollars, and a rough heating apparatus put in for fifty dollars. The cost of plants and seeds is slight, as the large firms make easy terms to the trade, and the other expenses, such as tools, fertilizers, cold frames for starting plants etc., would amount to little on so small a scale. One great advantage is that the returns are so quick. With a greenhouse in running order by the first of September, crops of several kinds can be marketed before Christmas. The chrysanthemums come first, then follow violets, carnations, tulips, hyacinths, narcissus, calla and Easter lilies, spiræa, roses, etc.

The secret of success is to utilize every inch of space. In a vegetable house the tables can be filled with lettuce, cucumbers or tomatoes, while rhubarb and mushrooms can be grown in the ground underneath. A good head for planning is a necessity, as no time must be wasted between crops. It is necessary to know what kind of fertilizer suits each crop best. Some thrive best with bone meal, some with leaf mould or pasture turf. There are special fertilizers for special crops.

The location of such a venture as this is more than half its success. At first thought one would think that the neighborhood of a large city was the best place, but this is not necessarily so, as one is at the mercy of commission agents and middlemen. The best place is a small town or community of prosperous people, retired tradesmen, who do not travel, but make their homes there all the year. Flowers in a prosperous community you do not have to market; customers will come to you for them. I sell all my flowers at my greenhouses. Parties, receptions, and weddings are constantly taking place. The profit is in decorating and set pieces, rather than in cut flowers. A great advantage in this profession is that there is so much room in it for originality and taste.

A branch in which a great deal of money can be made is in the sale of plants; all kinds of bedding plants are wanted in May and June for lawns, parks, cemeteries, cottages at the seashore, vases, and wayside nooks. Pots filled with two or three California violet plants in bloom brought seventy-five cents in this city last month, and pansies are in demand in their season. Ferns, palms, and orchids grace your dining rooms, churches, etc.

The filling of window boxes and the designing of new effects in jardinières and hanging baskets is a line in which a woman can be very successful. The rose in all its colors is one of the most profitable flowers to grow under glass and the demand is great, for people must have them. The raising of roses is a much more difficult branch of the business and should be taken up only after a certain amount of experience. When this is gained considerable money may be made in it.

Did you ever stop and think where and how the beautiful flowers were grown? The flower business has great prizes to offer if one is of an investigating turn of mind. The large

amount of money that was received for the Mrs. Lawson carnation is inspiring to one thinking of going into the business. It is wonderfully interesting to create new flowers, to make those bloom double that have heretofore been single, and to paint the lily a new color; it is really scientific work. It is adapted to women, and so profitable has it generally proved, that it is strange so few have taken it up.

If a woman decides to take up flower and vegetable culture as a profession she ought, if it be possible, to fit herself for it by a previous course of study in some agricultural college; she should be familiar with botany and chemistry. If she has a chance to travel and study the flora of other countries she has the greater chance of making a name for herself. Miss Myra Dock, of Philadelphia, is an illustration. She was sent out by the park commissioners to study the park system in Europe. Trees should be studied as well as landscape gardening. Perhaps some day women may be park commissioners and parks today show the need of some new element in that department of civic life.

The demand and supply for carnation pinks never was so great as at the present time. Women are raising them all over the country with great success. I am engaged in growing pinks and grow them for profit as well as pleasure. Miss Evelyn B. Taylor, a florist of Milford, Mass., has two carnation houses, one 37 by 19 ft., another 87 by 26 ft. She gives all her time to the work, propagating and growing her own stock, and caring for the houses. She has found a market for everything in her own town, which is much more profitable than selling on commission. She has perfect health, enjoys her work, and supports her mother and father.

In these progressive times the handle of the agricultural tool is coming to know the grasp of the woman's hand, almost as well as the needle or the broom, and many women are making reputations as farmers of progress. Among the agriculturists are wives, widows, and maidens, women who have begun with small means, and women of wealth who have entered the ranks for the pleasure they could get out of it, or for philanthropic purposes. One and all are bright, intelligent women, and the large majority

are educated and cultured. Some are in partnership with men, others own and manage farms for themselves, while many manage farms for other people. Careful investigation shows that these women have distinguished themselves by their skill and executive ability.

In some important specialties, such as flower-seed growing, poultry raising, fancy dairying, and the growing of raisins and nuts, they have been successful pioneers. Their farms are scattered all through the country, on the uplands and in the lowlands, among the valleys, and even on the mountain sides. They are found in the largest numbers in Maine, New York, Pennsylvania, Ohio, Michigan, Minnesota, Wisconsin, Kansas, South Dakota, and California. Some are cultivating their thousands of acres, using the steam engine as a plowman. The majority conduct farms of more than 100 acres, while a few are contented with a single acre, depending on the spade and hoe.

Women lead in poultry culture in which they began a decade ago and it has been an uphill struggle against prejudices. Few, it is said, make a failure of it and the time, they claim, will soon come when women will control the industry here in America. It pays a greater interest on the investment than any other branch of farming.

The notable success of the few New England women farmers, proves conclusively that education and brains are needed in the business. Two young women in Compton, R. I., are examples of college graduates going directly into outdoor work. These women saw a chance to make money by supplying Newport's epicures with dainties. Their spring lamb, young geese, and hothouse grapes bring fancy prices, and there is n't an "ology" that they studied but contributes in some way to their success.

Now that Secretary Wilson is studying over New England's abandoned farms to see what they need to bring them back to fertility and prosperity, he might do worse than advise giving these deserted acres into the care of women.

A flourishing little farm of three acres on the north end of Lake Champlain produces yearly more than two and a half tons of honey and fifteen hundred ducks, besides quantities of fruit which is marketed at the neighboring summer hotels. It is

owned and run by Miss Frances E. Wheeler, for several years a stenographer and typewriter. It seems quite a change from a stenographer's place in New York to the ownership and superintendence of a duck and bee farm. Yet in looking backward, the sense of harmony deepens between the two occupations. I have grown to understand that it does not so much matter *what* we do, as *how* we do it; that the qualities required for a successful stenographer are equally necessary for a duck and bee rancher. In both callings, if success is to be attained, ignorance must be overcome by perseverance, tact, and common sense. After several years of office work, Miss Wheeler's hands became disabled, and the problem arose how to save the little family home at Chazy, N. Y., with its bee plant.

Many women have been successful in growing tomatoes in hothouses, starting them in the fall from seed. For the house-grown product the prices are high, and they continue to yield good profits to the grower until shipments begin to arrive from the South. There are but a very few varieties suited for forcing, among them are the Early Essex and Aristocrat.

It may be of interest for you to know where this plant, the tomato, was first grown in this country. The story is told, that a good many years ago, a man recently arrived from the Bermuda Islands, was committed to a Pennsylvania jail. He had with him a few seeds, which he planted in the jail yard, but before the plants came to maturity he was discharged. The plants bore a strange fruit, which, as it ripened, changed from green to red, and was greatly admired by the prisoners. The matron of the jail, sure that it was poisonous, cautioned all the inmates against eating the fruit, but as she desired to save specimens of it, she planted some of the seeds the following spring, and just as the fruit was well ripened, the man from Bermuda revisited the jail, and asked to see the plant. He called for pepper, salt, and vinegar, and to the astonishment and horror of the spectators, ate the fruit with a relish. Having finished, he told them that this strange fruit was a tomato, or translated into English, a love-apple, and that it was wholesome and nutritious. The seeds were therefore carefully preserved and distributed among friends and neighbors, who cultivated it as a curiosity, but it was long

years before prejudice gave way to appetite, and this now most popular vegetable came into general use. Even now many people remember it as an ornamental rather than useful plant. Probably more tomatoes are canned than any other fruit or vegetable, as they can be served in so many ways: eaten raw, with salt, pepper, and vinegar, or with a salad dressing, or plainly stewed in sauces, soups, preserves, and pickles. The tomato is ever ready for an emergency, and the provident housekeeper is sure to have it in reserve. One of the most successful tomato growers I know of is an English woman who grows them to perfection, and she always finds a ready sale for them at some of the leading hotels in this city. Under the tables can be seen beds of mushrooms, and she is as equally successful in growing that vegetable, giving all her time to this work.

It was a good idea conceived by this Massachusetts Horticultural Society, in offering prizes to the children for School Gardens and School Herbariums. The cultivation and observation of plants in school grounds and instruction upon them being of high educational value. Native wild plants, such as ferns, grasses, asters, goldenrod, violets, native shrubs, and economic plants, grains, vegetable roots, and leguminous plants, must be the stock of the gardens. The children are approaching the coming season with unbounded zeal and enthusiasm. This tends to cultivate a higher taste for the beautiful.

One essential to success in gardening is a love for it; but given this and intelligence to first plan carefully, and afterward carry out plans with perseverance, gardening will be found a successful, pleasant, and congenial occupation. Women are beginning to think about these things. Many of them could do much better at floriculture than to work for the very low wages paid for woman's work in the cities. It is not so much labor and muscle nowadays, as brains and machinery. Don't do your work first and your thinking afterwards, but think and plan first and then work.

It is said that the wives and sisters of the soldiers of the Twentieth Kansas Regiment, when the men were in the Philippines, went out into the deserted fields to work. The crops needed attention and there was no one else to give it, as nearly

all the members of the regiment were farmers, and there were hundreds of girls at work on the farms. It is hoped that women will not be driven into the fields by such circumstances, but that more of them will be led to realize that an existence spent in healthy, honest out-of-door work, is an existence which will enable soul and body to expand as well as the mind. Let me urge the women of this society and city to engage in more out-of-door work, and bask in heaven's sunlight; fewer headaches would be heard of and nervous prostration would be unknown. Have a flower or vegetable garden; take care of it all yourself and don't neglect it.

I have classified this subject into three parts, the first being — "Possibilities for certain women; what a few have done, and more could do."

I hope it is no egotism to state that in both the floral and vegetable departments of horticulture in which I have been engaged for the past seventeen years I have been entirely successful. You may wonder why I, a woman, should be engaged in this occupation; but I was brought up in the business of market gardening. My father followed it before me, and being led to it, both by circumstances and inclination, I naturally took it up. I must have had a strong love for the work or I should not have followed it as I have continuously until now.

I shall endeavor to show the business of gardening for women to be a profitable one. But let none deceive themselves by supposing that these profits are attainable without steady, personal application. My home of sixty-eight acres is located in Holliston, Mass., on the Boston & Albany railroad, twenty-five miles from Boston, thus being well located for gardening. The land slopes gently to the southeast and northwest, so that I can get two crops of early vegetables on the southeast slope, and peach orchards and later crops on the northwest. The branches in which I am most interested and engaged are flowers, vegetables, and fruits. Peach orchards occupy a large corner of my farm and have been a source of profit. When the trees are young, vegetables and small fruits can be grown between the rows, thus using all the available land. Apples, pears, plums, and small fruits I also grow for profit. A number of peach growers in my locality

have lifted mortgages from their farms by means of their peach crops. I am here today to extend to horticulture and floriculture the methods already employed in many other fields of industry.

Second — "Possibilities for all women; what many have done, and all can do."

It is not my aim or purpose to discourage or cause any of the thousands of women in this country who are engaged in other vocations to be dissatisfied with their lot, but it is to show those, who are endeavoring to solve the question of self support, that out-of-door occupations for women can be made profitable, provided they be carried on with steady personal application, without which there is success in nothing. As might be expected Vermont's best woman farmer turned her attention to dairying, and has reached very near the top notch in dairy fame. Mrs. Carrie J. Nelson, of Ryegate, Vermont, was left a widow with $1000 in money and as much more in a mortgaged farm. There were four children under eight years of age. In reviewing her work she says, "I did not have the courage at that time to put the $1000 into the farm and try and get a living from it, for fear that I might lose it, so I sold it to my brother-in-law, who lived in Boston, with the understanding that I should manage all his business here, and that he should board my family. At the end of five years I bought back the farm, thinking that if I could manage it for him, I certainly could for myself. I have always enjoyed my dairy work, striving to stand at the head, or as near to it as possible, in the quality of my butter."

Mrs. Nelson has taken the first prizes in the Vermont Dairymen's Association, Vermont Butter Makers' Association, Boston Food Fair, Vermont and New Hampshire Interstate Fairs, and the sweepstakes at the Vermont State Fair. She always hires the best help to be found, at whatever the cost, then she keeps the same help as long as possible.

Hundreds of women are earning pin money with poultry, early vegetables, fruits, jellies, pickles, etc. Those of you present who visited the Pan American Exhibition at Buffalo, N. Y., understand the meaning of my subject, "Remunerative Outdoor Occupations for Women." The march of improvement is onward and every day brings something new.

Third — "Possibilities for many Women; what some have done, and more can do."

In my neighborhood I know of a woman who gets a good living for herself and family by the cultivation of gladioli. She has a large garden of the choicest varieties and colors, sending them to Boston for sale in their season; and she also sells the bulbs. A woman living not far from this city has two long houses full of English violets, which, in the season, average her five dollars per day. She can support her family if her husband is not able to do so.

Where my gardens are today once was rocky land covered with bushes of all kinds; now a mowing machine can run over any part of it, and the result has been accomplished by nothing more than energy and perseverance. If I can get a good living and something more in sterile New England, and the soil of my farm is no better than that of thousands of others in Massachusetts, is it not an inducement and encouragement for those who live in the more fertile regions, from the Potomac to the Rio Grande, and from the Golden Gate to the Hudson, to engage in this same honorable occupation? We are living in a great age; history and our own experiences tell us, that in the last half of the century just passed we have witnessed some of the most wonderful inventions ever known. What great progress has been made in agriculture, in horticulture, in floriculture, in literature, in science, in art, and especially in medical science. What comforts and luxuries are enjoyed today by the humblest people that were unknown, even to the wealthy, a few decades ago.

I bring you words of encouragement for 1903; the springtime will soon be here when we must be up and doing. On the morning of a memorable battle Napoleon Bonaparte pointed his gleaming sword toward the morning sun, and said to the officers who stood about him, "Behold! behold! the sun of victory." May the same sun of victory shine on all connected with the Massachusetts Horticultural Society and all engaged in floriculture, horticulture, and agriculture, and may they be characterized, far and wide, for their harmony, contentment, and prosperity.

Discussion.

At the close of Miss Cutler's lecture an animated discussion followed, showing the great interest in the subject on the part of the large number of women present. Many questions were asked which were clearly and tersely answered by the lecturer. Mrs. E. M. Gill asked if the lecturer had experienced trouble with the dry rot in carnations, and if she had succeeded well in their cultivation. Miss Cutler replied that she had generally succeeded although there are always obstacles to overcome. Successive failures furnished experience which resulted at last in being able to know how to overcome them. The earth should be enriched every little while and worked over and liberally watered twice a week. The cold weather of the present winter had been a serious obstacle to overcome in greenhouse cultivation.

A lady asked if there was an opportunity for women who were not capitalists to learn the business, and if positions could be obtained at a reasonable salary in which to learn the business, and if one in starting out could make a living during the first year. The lecturer replied that she thought women interested in the work could find employment in seed stores, florists' establishments, and greenhouses, but it all depended, as in every department of industry, upon the tact and perseverance of the individual. Other questions and answers were as follows:

Do you repot plants in winter? Yes, when they need them.

In bringing your land to its present condition what fertilizers did you use? For general crops, Stockbridge fertilizers, for the greenhouse, pasture mould. Chimney soot should be used only around grape-vines.

How far apart should violets be placed? Nine by nine inches. Many women earn a living by the cultivation of violets.

Is there not some prejudice on the part of the public against women engaging in this business of the cultivation of plants and vegetables, and is not the work too heavy for women? I do not see how the public can help itself. Women have just as much right to engage in this business as men. A man can be hired to do the heavier and more laborious work.

What sources of information can you recommend to a person

about to start in the business? The best way is to learn by experience. No matter if you do make mistakes; keep right on and try again. Books sometimes mislead and are not always reliable.

What do you consider a good winter covering for an old-fashioned garden? Leaves, pine boughs, or any kind of coarse dressing. Roses need protection in winter by a straw covering.

Can anything be done in a region remote from a railroad? Railroad communication is not always a necessity. As was said in the lecture I consider a location near a prosperous town better than one near a large city. You are not then brought into competition with commission shippers of produce. Study your own market. It is a good thing to raise something to have all the year round, especially in winter.

Benjamin P. Ware was called upon and said that he was pleased to have the opportunity of listening to the interesting personal experiences of the lecturer. It was evidence and proof of what may be done by the women to improve their condition by entering into a healthful occupation.

Outdoor life conduces to health and strength and if more women engaged in it there would be fewer cases of nervous prostration and nervous headaches.

He hoped, however, that they would not go into the business in such numbers as to drive out the few remaining men engaged in it.

He called attention to Dr. Edward Everett Hale's three rules of life:

To be out of doors.

To come in contact with people.

To meet somebody every day wiser than ourselves and to learn something from them.

Regarding the last rule he thought it would be difficult for Dr. Hale to carry it out, the meeting with someone wiser than himself.

We have today, however, met with someone wiser than ourselves in the line of horticulture as the lecturer has shown us.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 17, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. President HADWEN presided and the following lecture was delivered:

SOME OBSERVATIONS AND EXPERIENCES IN BERLIN BY A MASSACHUSETTS FARMER.

BY BENJAMIN P. WARE, MARBLEHEAD, MASS.

Berlin is one of the largest cities in Europe, containing nearly two millions of inhabitants, and is rapidly increasing in population. It is by far the most beautiful city that I saw in my journey through several countries and is renowned as the home of kings and emperors for many centuries. There are in the city some half-dozen royal palaces, besides many others less pretentious. Among the most important is the Royal Castle, begun by Elector Frederick II, in 1443, which has since been enlarged and embellished by succeeding kings and emperors, until the immense structure contains over seven hundred apartments. Only a portion of these is open to the public at fifty pf. or twelve cents as admittance fee. Visitors are shown in parties through the palace by an official who eloquently describes, in German of course, its costly and elegant contents.

The entrance from the inner court is by a wide ascending passage to the second story with brick pavement, apparently to enable horsemen to ride up to the official reception room. Here the visitors are provided with loose felt slippers, so that the polished oak floors may not be marred, and they are first conducted into a long corridor, one wall of which is hung with immense tapestries, representing battle scenes, and so exquisitely wrought and shaded that it was very difficult to decide whether they were oil paintings or not. A piece four inches square is a day's work for a man at Gobelin, the home of the art. Other rooms are hung with portraits of the family of Frederick the Great and of all of the Prussian monarchs down to Frederick

William IV. There are also portraits of many of the old electors and other distinguished men.

Such decorations are common in most of the palaces of Europe. The Hall of the Knights is especially richly upholstered in silk-velvet decorations. One side is hung with immense golden salvers and large dishes, lighted up from behind by electric lights that show them to the best advantage, while from the centre hangs an immense crystal chandelier of surpassing beauty which, when lighted, would be of indescribable grandeur. The throne room is equally rich in decoration, and its gallery was formerly of massive silver, that Frederick the Great had caused to be melted into coin to aid him in the conduct of his wars.

The new chapel in the upper story, built by Frederick William IV, is beautifully inlaid with variegated stones, and the columns and pulpit are of different marbles of most elegant designs. All royal weddings are celebrated here, while the old chapel is used for other purposes, being a large room, furnished with crimson-velvet chairs and the walls hung with oil paintings showing the history of Jesus from Annunciation to Crucifixion. Such decorations may be found in several cities of Germany. This meagre description leaves very much of the interest and beauty attached to this palace unmentioned for want of time, but it gives an idea of many other palaces in and about Berlin, and also of a half-dozen others of great historical interest at Potsdam.

At Charlottenburg, a part of Berlin, there is a palace of the seventeenth century containing rare furnishings, which was occupied by Napoleon I after the conquest of Berlin. One night he was frightened by the striking of a clock, supposing himself betrayed by the Prussians. The Mausoleum near by, in the beautiful park adjoining, is approached by a walk between two rows of spruce trees, giving a sombre effect appropriate to the tombs of Frederick William III and his beautiful Queen Louisa, beloved by all Germany. She was taken as a prisoner by Napoleon I to France, and died in 1810 from the effects of the trials and exposure attending her capture. For this act the German people never forgave France. Besides these are the remains of their son Emperor William I and of his wife Augusta. Very beautiful, reclining marble figures of the four are in the room

over the vault, which is lighted by blue-glass windows, producing an effect upon the visitor of subdued solemnity. The heart of Frederick William I, in a marble casket, is placed at the feet of his parents.

Berlin is a city of monuments and some of the long avenues are lined with the marble statues of distinguished men, in equestrian, sitting, or standing postures. In public squares and in principal streets are grand equestrian and other statues, in bronze, of emperors, theologians, reformers, and others, too numerous to particularize. The city is rapidly extending its borders with wide streets and new buildings, the latter nearly all built of coarse brick covered with stucco, giving the appearance of marble. The style of architecture, as well as of the construction of all new buildings is under the control of a government commissioner, hence there is much uniformity in the appearance of the dwelling houses. The system of taxation is largely the income tax, wisely and strictly enforced, without fear or favor, a worthy example that Massachusetts may well follow. "Unter den Linden" is a wide thoroughfare that probably presents more of interest to a traveler than any other portion of the city. The entrance is through the Brandenburg Gate, built in 1789. This structure, which is eighty-five feet high and two hundred and five feet wide, is surmounted by a group of bronze figures emblematic of victory, consisting of a chariot drawn by four horses. The chariot was taken to France by Napoleon I as a trophy of war, but returned in 1815. This is a magnificent structure and is a fitting entrance to a street on which are located four or more royal palaces, and the university buildings, accommodating five thousand students, and having a bronze statue of Humboldt in the foreground. There are also many elegant buildings for foreign embassies, for residences, and for stores containing the richest goods. The Royal Museum, the old and new, is free to the public and contains a wonderful collection of the arts of ancient and modern times, ancient sculptures, many works of the old masters, Raphael, Rubens, Rembrant, Van Dyke, and others, who are represented by a large number of their best works. There is another gallery for modern paintings exclusively. Relics from Herculaneum and also from

ancient Egypt are here found in vast numbers. The old saying that there is nothing new under the sun is here exemplified by steelyards, such as farmers used thirty years ago, for weighing, and safety pins, large and small, of gold, silver, and iron, that are some thousands of years old. This vast collection of curiosities compares favorably with national museums in other countries of Europe. There are eight or nine other museums in Berlin of special technical collections of great value to the student. In one of them is the carriage built for Napoleon's use at his second coronation, elegant but small in comparison with that built for the coronation of George III, in 1761, which weighs four tons and is still in use.

The Royal Arsenal located on this street is exceedingly interesting to the visitor. It is a square building, each side measuring two hundred and ninety-five feet in length with a quadrangle adjoining of one hundred and twenty-five feet. At the front entrance are several gigantic bronze statues of emperors noted for military valor, and plans of fortifications and battle grounds, in high relief. This immense building is filled with weapons of warfare from the eighth century up to the present time; from the bow and arrow to the Mauser rifle; from the old smooth bore cannon to the latest rifled fieldpiece. There are figures of soldiers dressed in the fighting costumes of different ages, and of mounted officers arrayed in full uniform, all very systematically arranged, with plenty of room for inspection. Cannons and other trophies captured in the last French war, some showing the deep indentations caused by the opposing shot, are displayed under a glass-roofed court adjoining.

The Berlin Aquarium is considered one of the best in the world. It is in the form of a labyrinthian walk through a subterranean passage among volcanic caves, with stalagmites and stalactites curiously constructed, with alcoves and niches containing glass tanks of clear water, lighted by electricity, in which are the oddest rare fishes and sea anemones in great and beautiful variety. In a large tank was a diver enclosed in the complete armor and with the apparatus used in sea diving; in all, making an exceedingly interesting study.

The Porcelain Factory is another interesting place to visit;

founded by private means and afterward purchased by Frederick the Great, it is still continued under royal control. The whole process of manufacture from the grinding of the raw material to the finished product is open for inspection four days in the week. In beauty of design and elegance of finish, the ware now produced compares favorably with that of any other country. To an American it seemed incongruous to see big burly men decorating the dishes with a camel's-hair brush, and to look out of the window and see women cleaning the streets, as is common in Berlin and other German cities.

Of all the beautiful monuments in Berlin, there is none more imposing and artistic than the statue of William I, which was unveiled on the anniversary of his one hundredth birthday, March 22, 1897. It was designed by Professor Begas and built at a cost of four million marks. The beautiful peristyle in the background is surmounted at each end by a quadriga driven by the goddess of liberty, carrying banners aloft, representing North and South Germany. The equestrian statue of the great emperor forms the central figure, which is sixty-five feet high resting upon a pedestal decorated with exquisitely worked figures, and all forming a masterpiece of the sculptor's art. This is only one of the many monuments erected all over Germany to the memory of one of her greatest and most beloved rulers.

Among the many monumental columns, commemorating important battles and victories, the most imposing is that of the Column of Victory erected in memory of victories over the Danes and French and unveiled in 1873. On the summit is a figure of the goddess of victory which is forty-two feet high and the column itself is one hundred and ninety-eight feet high. At the base, on each side of a large square enclosing a large reception room, are bas-reliefs of battle scenes in bronze, most exquisitely wrought. By climbing up two hundred and twenty-seven steps to the outlook a grand and extended view of the city is obtained. Near by are the House of Parliament, approached by the castle bridge which spans the river Spree, the Royal Castle, and the Bourse. There is a bird's eye view of that magnificent thoroughfare, Unter den Linden, before spoken of, and a full view of the great Tiergarten, beginning near by and extending along the river

Spree two miles to Charlottenberg. It is four miles wide and was formerly a game preserve, but laid out by King Frederick I as a public park. It is a natural forest with drives and walks, kept in perfect order, permeating it in all directions. Thus we see a public park of eight square miles right in the heart of the city and unsurpassed in beauty and extent by any other in Europe. There are several other parks within the city limits notable for the fine taste displayed in their management and for the healthful effect upon the people.

While palaces, public buildings, boulevards, monuments, museums, art galleries, and parks are of great interest to travelers in foreign countries, and sources of learning, yet the people themselves, their characteristics, their methods of life, their art of living, are of equal or more interest. The German people are eminently social in their habits; there are beer gardens everywhere. Places of resort and entertainment are very numerous and largely attended and, in the mild season, principally in the open air. While most Germans drink beer, and it is of excellent quality, they do not guzzle it, as many do in this country I am sorry to say, but sit in companies, and smoke and chat and sip, possibly spending a half-hour over a single glass. An American is surprised at finding so many people engaged in this way, both by day and by night. Many places are crowded nearly all night and we wonder when they sleep or earn their living. At the theatres each seat is provided with a small stand on which to rest a glass of beer and there are waiters in constant attendance to furnish it. Notwithstanding this I saw no drunkenness in all Europe. How different the result of the saloons in this country, the reports of the police court will tell. In Germany our common custom of treating is unknown. There, if a company of men drink together, each pays for his drink. Here a company of young men or old resort to a saloon, one treats all round and they pass on to another saloon, someone else stands treat, and here it is guzzling not sipping, hence, when they have each treated all round, they are in common parlance, "full."

The narrative of my experiences in Berlin may be of interest to those who are thinking of a journey abroad.

On my arrival there I was disappointed in failing to find

friends who had not yet returned from America, and who had a residence in Berlin. So I found myself unexpectedly in a strange city, knowing on one, and unable to understand or speak a word of its language. My first desire was to find a hotel in the neighborhood of my friends' residence. With my only baggage, a gripsack in hand, I started in search of a temporary home on a principal street. I enquired of a German, who kept a fruit stand, if he would kindly direct me to a hotel. I will say right here that I received the utmost kindness and polite attention from everyone I met during the whole of my journey abroad. This good-natured German not understanding a word I said, stopped everyone that passed and asked of them if they could speak English, but no one could. By pantomime I was made to understand that if I would cross the street and go up to the third story of the opposite building I might possibly find some one who could. I went as directed feeling very doubtful as to the result. After crossing the street I stood waiting and considering the possibility of success by climbing up to the third story, when an exceedingly beautiful young lady approached me and said, "Sir, I can speak a little English." I asked her if she would kindly direct me to a hotel; she said that she was going that way and would conduct me to one, insisting upon taking my hand bag which, of course, was refused. I learned while chatting with her on the way that she was from Poland and was in Berlin to secure an education. Soon she stopped in front of an imposing building, and said, "Here is the hotel." She lightly tripped up the steps, touched the bell button, returned, clasped my hand with a "God bless you," and was gone. She disappeared from my sight as suddenly as if she had been snatched up to heaven, where she seemed to me to belong. I have since cherished her memory as my angel of light. I found the hotel satisfactory, except that I could neither understand nor be understood, and after the first meal at the table, they sent outside for someone to take my order who could speak a little English.

The custom in Germany is to sleep in single beds, and the bed covering is a tick filled with down, which when on the bed looks like a partially filled balloon. My first night's experience was quite notable.

I looked upon the balloon with some misgivings, as the tick is just the width of the narrow bedstead, and only as long as to reach from the footboard nearly to the pillow. In getting under it I was careful not to disturb its equilibrium. After a while I wished to cover my shoulders a little more so I gave it my customary "yank" and my bare feet were uncovered to an alarming extent, which caused me to suddenly give the thing a push towards the foot of the bed, when I found the upper part of my body much more exposed. This made it necessary to get up and rearrange the whole business. After again getting carefully adjusted in bed and nearly asleep, as is my custom I made a sudden turnover, and flop it went on to the floor, and then I was under the necessity of another rearrangement. Moral, when you go to bed in Germany keep still and the downy bed-cover will settle about you like the atmosphere, giving the delightful sensation of being tucked in by your mother.

The goose is to Germany what the turkey is to New England. It is not only the principal dish on festival occasions, but great quantities are in daily use. In Berlin from fifteen to thirty carloads of geese arrive daily, each containing twelve hundred geese. These are largely imported from Russia under very careful inspection. If a single goose is found diseased the whole carload is quarantined at the expense of the shipper for a limited time. Such as are not fitted for market are kept and fattened until they are. Others are nailed through their feet to the floor, crammed with concentrated food, and in about two weeks they become very fat, with greatly enlarged livers, which, though diseased, command the high prices that epicures are willing to pay in order to gratify their abnormal appetites. There is expended annually in Berlin for geese the sum of $3,500,000, thus making the common use of downy bed covering possible.

In passing a fine store with large plate-glass windows, in which was a beautiful display of large fat geese, I noticed several two-bushel baskets, one filled with the heads of geese, another with the feet, one with huge gizzards, and still another with the second joints of wings. These excited my curiosity. I went in and was politely received by one of the salesmen. I told him that I came in not to buy, but to look about his beautiful store. Pointing to

the baskets of offal, I said, "Of course you don't sell those. What do you do with them?" He did not understand me any more than I understood him. This we do not always consider. He, supposing that I wanted to buy, began to fill a paper bag. From the first basket he took a goose head, looking up to see if I wanted more. I shook my head, protesting that I did not want to buy the stuff, so he went on putting one from each basket into the bag, then did it up into a nice package and offered it to me. With considerable vehemence I again declared that I did not want it. He, thinking I came from the country at some distance and wanted a strong package, went and put on an extra wrapping, and again the third, notwithstanding my protestations, and then he made out a bill for ninety pfennigs (22½ cts.) which I took to the cashier's desk and paid without further parlance, leaving the bundle behind and feeling quite satisfied with my experience.

There is no better way for a farmer to judge of the products of a country than by visiting the markets. Berlin has fourteen market halls maintained by the city. One of the most important is the Neue, both wholesale and retail. It is a very large two-story building divided into small stalls for the retail trade, mostly in charge of women, and devoted to every kind of produce. Here are flowers, fruit, vegetables, fish which are sold alive, game, and meats of all kinds. In every department may be found a great variety and of all qualities and the stalls are crowded, making it quite difficult to get about. They have here what I never saw anywhere else, a clearance sale. About noon, goods that are a little *passé* are placed in a sizable space with a long bench or counter in front. An auctioneer stands behind and offers the goods, from a single duck, or goose, to a box of game, to the crowd of buyers. The articles are passed rapidly along the counter for quick examination, being bid upon at the same time and sold.

A clerk takes the buyer's name and the price for settlement and delivery after the sale. Thus in an hour large quantities of goods are sold to the mutual advantage of both parties. The seller disposes of what might be lost in another day or two and the buyer gets for a low price what is yet good.

The river Spree is used as a canal for the cheap transportation

of produce from long distances in the country to Berlin. I noticed a canal boat about one hundred and fifty feet long and twenty feet wide, deeply loaded in bulk with pears and apples. They were in bins of different sizes, in the hold, apparently belonging to different producers, and put in charge of the captain, who seemed to act as their agent for the sale of the produce. The fruit was taken from the hold in large baskets holding about a barrel each, handled with very little care, and sold from the deck to hucksters and other dealers. Of course, this fruit although coming directly from the orchard would soon decay and never be in its best flavor. This description may be applied to other farm products. There are, however, some choice fruits to be found in fancy stores. The demand for near by products is largely supplied by hand wagons drawn by a woman and a dog, or a woman and two dogs, which seems to be a whole team. It is astonishing what large loads they draw.

Family bread making is unknown in Germany and I think in all Europe.

Milk is sold about the city from tanks on wheels. These tanks are divided into three parts from which cream, skimmed milk, and whole milk are drawn from faucets as called for.

Dwelling houses are warmed by the same style of heaters that have been in use in Germany for centuries, consisting of a piece of masonry, two feet square and six feet high, covered with tiles more or less ornamented. This encloses a fire box very inconveniently arranged for use. There is very little wood in Germany and it is cared for with the strictest economy. Coal is used and also peat, compressed with hydraulic pressure into brick forms. These are sold for $1.75 per thousand, seemingly a very low price, but labor is cheap in Germany. There are in the German empire 4,942,000 acres of peat bogs and in Ireland 12,000 square miles, covering two-fifths of the whole surface of the country, apparently an inexhaustible supply.

The German people have the reputation of paying little regard to the Sabbath. My experience of a Sunday in Berlin shows that this statement does not apply to all. I attended service at the Kaiser William Memorial Church, the newest and most beautiful church in Berlin. It was dedicated Sept. 2nd, 1895, and

was built at a cost of five million marks. The chime of bells was cast from cannons captured in recent wars. It was on a perfect September morning, the sky clear and calm, the temperature perfect, the trees in full foliage, flowers in profusion, and all nature seemed to join with the spirit of God's service that prevailed. I met a middle-aged German who kindly approached me and though not understanding each other verbally, spiritually and by pantomime I learned his thought. That there is one God in heaven whose sun shines upon the American, the Englishman, and the German alike, He is our Father, we are brothers, and offered his hand. The church doors were opened at ten o'clock and the service began at half-past ten. The seats are wide oaken benches with backs all numbered allowing twenty-four inches each. While this is a free church of the Lutheran denomination (the popular sect of Germany) there are some seats reserved with the owner's name on a brass plate in front. During the half hour before service there is some confusion by the rush of people selecting their seats, as no ushers are present. At the altar which stands in the middle of a round alcove is a large marble statue of Jesus, exquisitely wrought and surrounded by beautiful emblematic stained-glass windows, lighted by six candles with two other candles in front.

The effect of this is very imposing. The service began with an organ prelude, then singing by a highly trained quartette, with no accompaniment to drown the sweet tones of the singers. Then music by a choir and a hymn sung by the whole congregation of some two thousand people.

Such a chorus of sacred song seemed to lift us to the very gates of heaven. Other music by the quartette and choir followed. Thus, for three-quarters of an hour, the service seemed to run itself, as no minister had yet been seen. The minister then appeared and began with prayer from the floor, and the reading of a psalm, with responsive singing by the whole congregation. The Germans are a nation of trained musicians and singers. The minister then took his place in a high pulpit on one side of the church. After the usual notices he read the scripture lesson, the audience standing out of respect to the word of God. Then came the sermon of twenty-five minutes preached without notes

and with much force and apparent eloquence. He then descended to the altar, made a short prayer, followed by a hymn sung by the whole congregation; the numbers of the hymns to be sung being posted all about the church. All voluntarily joined in silent prayer as the closing service, the organ playing as the audience retired.

The communion service which immediately followed, was conducted in the usual manner, by a short address and singing by the choir. Then as many as could knelt upon cushions arranged around the altar and the minister passed in front putting a piece of bread into the mouth of each communicant, after which he put the chalice of wine to the lips of each. They then fell back and others took their places, until all were served, about fifty in number. This method is the same as practiced at the passion play at Ober-Ammergau which I had the pleasure of seeing the next Sunday.

The Zoölogical Garden of Berlin which I visited that Sunday afternoon is probably unsurpassed by that of any other country in natural environment, and the good condition and variety of animals on exhibition. It is a veritable garden. From the entrance is a broad graveled roadway, about thirty feet wide, extending well into the grounds. On each side are beds of choice flowers and on the right are ponds stocked with waterfowl of every description.

In the midst of a natural forest growth of trees are located handsome brick buildings for the lions, tigers, bears, and other animals, with spacious iron-barred red cages attached for open air exercise and exhibition. There is a large and artistically designed brick building for three giraffes with plenty of room, and there are suitable enclosures for nearly every known variety of animal and bird life, a poultry yard, a sheep fold, and a deer park containing specimens of the different species. An effort has been made to give to every animal conditions as natural as is possible under confinement.

This garden is a place of general resort, with a large restaurant where drinks of every description, from milk to champagne, and food, from Frankfort sausage to the rarest game can be obtained. It is provided with acres of tables, each with four seats, for the

accommodation and service of the visitors who come in crowds on evenings, holidays, and Sunday afternoons. There are two band stands near by where full bands play alternately, so that the choicest German music is continuous. On that Sunday afternoon, about two o'clock, people began to come in. The usual entrance fee is one mark, but on holidays and Sundays it is fifty pfennigs, or twelve cents which is half price. They came singly, in couples, and in whole families, including grandparents, parents, and children of all ages, nurses with babies in carriages, all dressed in their best, and all on their good behavior. All was quiet and peaceful, no boisterous talking, and nothing to disturb the peace of the day. Everything was in harmony with the beauties of heaven above, and of the earth surrounding them. The seats at the tables were rapidly filled, and many families brought their own refreshments, ordering a cup of tea, a glass of milk, or more as wanted, while others would have such elaborate and costly viands as their means and desires required. Many were walking about, and crowds gathered along the broad walk, to aid and to see the little children taking rides upon the elephant, the camel, and in carts and carriages drawn by zebras, llamas, donkeys, and goats. After being fairly loaded, the animals would be led by their keepers up the walk and back, when other children would take their places in great glee and happiness. Did those people break the Sabbath or keep it in a rational way?

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 24, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. President HADWEN presided and the following lecture was delivered:

SYSTEMATIC POMOLOGY.

BY PROFESSOR F. A. WAUGH, AMHERST, MASS.

Amongst all the horticultural industries of this country pomology ranks first both in public interest and the amount of capital actually involved. It is necessary only to attend the meetings of the principal so-called horticultural societies throughout the United States and Canada to find that they are in most cases really pomological societies. Now this subject of pomology has received a somewhat one-sided development in this country due, of course, to the exigencies of circumstances. It is a one-sided development, however, which ought not to be accepted as final. We ought to do what we can to bring the subject into its proper balance.

The subject of pomology naturally divides into two parts. If we study the fruits themselves to ascertain their characters, their names, and their relationships, we are dealing with systematic pomology. If we study fruit growing, on the other hand, we are dealing with what we might call practical pomology, that is, with the practice of fruit growing. The term practical in this sense ought not to be construed as meaning that systematic pomology is any less *practical* than practical pomology.

We have already appealed to the testimony of the American horticultural societies. If we were to analyze their programs and follow their discussions we would be likely to find that the greatest interest of all during recent years, although manifestly pomological in nature, has not attached to either one of the branches already mentioned. The modern discussions have not concerned themselves with varieties, nor even with the methods of growing fruit, but have been most persistent and urgent on methods

of handling and selling fruit. These are the real problems which interest the average fruit grower of the present day. The whole color of pomological discussion has become commercial, and we have developed, therefore, another branch of pomology which does not primarily belong to the subject but which may be properly called commercial pomology.

I have already hinted my belief that commercial and practical pomology in this country have outgrown our knowledge of systematic pomology, and as I shall recur to this point again at the close of my address, I will dismiss it for the present with only another introductory word or two. Anyone who has had any experience with fruit exhibits or in dealing with the affairs of a horticultural society, or who has had occasion to use our modern horticultural literature to any extent, must have been frequently impressed with the remarkable scarcity of current descriptions of fruits, and with the utter inadequacy of those descriptions which he actually finds. Even in the experiment station bulletins, which are supposed to be constructed on broad, scientific principles, we find very few good descriptions indeed. In the horticultural society reports, which ought in particular to furnish a complete and systematic record of the introduction of varieties, we are treated no better. Descriptions of new varieties are very seldom given, and when they are attempted they are presented in the most vague and general terms and according to no formula at all. These are matters which could be easily corrected, and the fact that present conditions are no better in this respect is a strong argument in favor of the rejuvenation of the lost science of systematic pomology.

Systematic pomology, as I understand it, may be readily subdivided into three branches. These are (1) description, (2) nomenclature, and (3) classification. In order to study fruits we must first secure accurate descriptions of them, we must secondly decide upon correct and unequivocal names, and lastly we must classify these varieties in order to understand them best.

Descriptive Pomology.

Good judgment, born of natural ability and educated through experience, are necessary to produce the best results in the

descriptions of fruits. Not every greenhorn can give off-hand an accurate, reliable, and useful description. Judgment and experience, however, can be greatly aided by a suitable method for description; and a good method may even in some degree take their place. When I had my first lesson in this subject, I was provided by my teacher with a formula which I followed from point to point with the specimens in hand. This formula was of great assistance, even though, as I now believe, it was distinctly imperfect. The adoption of a comprehensive formula for description may be looked upon as the first step in systematic pomology.

It is requisite in the next place that the pomologist should supply himself with a suitable vocabulary of descriptive terms. We are not so poor in this respect as in others. We have very satisfactory nouns and adjectives with which to describe our standard fruits. Every man who has had much experience in this line, however, has found it necessary from time to time to coin some descriptive terms outright. As he works along from day to day he is apt to rely more and more on his own judgment to select and manufacture these descriptive adjectives, so that even having the best vocabulary as a beginning, the successful systematic pomologist is likely to make valuable improvements of his own.

Allow me to turn back now to the matter of the descriptive formula. It has been found best, as the result of considerable experience, to have this outline printed in the form of a description-blank. On this blank the various points to be described are entered in their proper order and vacant spaces are left into which the pomologist may enter his characterizations. Following are examples of a few of the blanks of this kind which we have in use at the department of horticulture, Massachusetts Agricultural College. Similar blanks have been brought into use in several of the other colleges and experiment stations in this country and in Canada. The Division of Pomology of the Department of Agriculture in Washington has also in use a much more elaborate blank, a sample of which I present also. So far as I know, there is not a horticultural society on the continent which has adopted any similar scheme.

APPLE

FRUIT: Form *size*

cavity *stem*

basin *calyx*

color

dots *bloom*

skin *flesh*

core *flavor*

quality *season*

TREE:

GENERAL NOTES:

Specimens received from *Described by* *Date*

Mass. Agric. College *Hatch Experiment Station* *Depart. of Horticulture*

Group *PEACH*

FRUIT: Form *size*

cavity *stem*

suture *apex*

color

dots *bloom*

skin *flesh*

stone *adhesion*

flavor *quality* *season*

TREE:

FOLIAGE: *glands*

GENERAL NOTES:

Specimens grown by *Described by* *Date*

Mass. Agric. College *Hatch Experiment Station* *Depart. of Horticulture*

Group **PLUM**

FRUIT: Form *size*

cavity *stem*

suture *apex*

color

dots *bloom*

skin *flesh*

stone

flavor *quality* *season*

TREE:

FOLIAGE:

GENERAL NOTES:

Specimens grown by *Described by* *Date*

Mass. Agric. College *Hatch Experiment Station* *Depart. of Horticulture*

STRAWBERRY

FRUIT: Form

size calyx

core texture

external color

color of flesh seeds

flavor quality

season shipping quality

BLOSSOM: general character sex

PLANT: vigor runners

foliage rust

GENERAL NOTES:

Specimens received from Described by Date

Mass. Agric. College Hatch Experiment Station Depart. of Horticulture

United States Department of Agriculture.

DIVISION OF POMOLOGY.

POMOLOGICAL NOTES.

SECTION C. BRAMBLES. Date of Receipt,_____

Blackberries, Raspberries, etc. " " Description,_____

No. of receipt, _____ Journal page,_____ Volume,_____

Name and address of sender,_____

Species,_____ Name,_____ Purpose,_____

Condition at time of receipt,_____

Season,_____ classification,_____

Form; general,_____ vert. sect._____ cross sect._____

Size,_____ dimensions,_____

Arrangements of blossoms and fruit,_____

Stem; length,_____ character,_____

Receptacle; adhesion,_____ character,_____

Calyx; size,_____ number of sepals,_____

adherence,_____ color,_____

Surface, regularity,_____ gloss, etc. _____

Color,_____ permanence,_____

Drupes; arrangement,_____ character,_____

Comp. number,_____ size,_____ color,_____

Seeds: comparative size,_____ hardness,_____

Fungous or insect damage,_____

Flesh; color,_____ texture,_____

solidity,_____ firmness,_____

juiciness,_____ shipping quality,_____

Flavor,_____.

Aroma,_____

Quality,_____

How illustrated,_____

Notes,_____

Sketch.

Plant.

Herb. arrange.,_____

How grown,_____

Vigor_____

Habit _____

Canes,_____

Flowers,_____

Date of bloom,_____

Leaf; { form,_____ leaflets,_____ / size,_____ color,_____ / margin, _____ petiole,_____

Productiveness,_____

Hardiness_____

Susceptibility to disease,_____

A few general comments on these descriptive forms may make their purpose and use more clear. It will be seen that the name of the varieties is commonly placed at the upper left hand corner where it will be most conveniently seen. In the upper right hand corner is the word apple, pear, gooseberry, or whatever it may be, designating the class of fruit described. This is almost a necessity in keeping up a large series of descriptions because the blanks must often be handled by inexpert persons who do not know whether Victor is the name of a pear, persimmon, or parsnip. In a set of blanks which I designed for use in the Vermont Experiment Station when I was a member of the staff there, I have put the apple descriptions on yellow paper, the plums on white, cherries on light blue, etc., with the expectation that this difference of color would make the assortment of descriptions easier. The result was rather gaudy and certainly striking, but I cannot say that it was a great success.

The most important suggestion to be made regarding the design of these description-blanks is that they should be of a definite and uniform size, preferably five by eight inches. I am aware that this size is rather meagre for the entry of a complete description, especially if there are many general notes to be included. It will usually answer the purpose, however, and in case the space proves to be too small it is a simple matter to continue the description upon a second sheet of paper. The large sheets are much more difficult to handle and I feel sure, after having experimented with many different sizes and styles, that five by eight inches is a very fair compromise of all the requirements.

I have tried two ways of filing these descriptions. In pursuance of the simpler method, I have had the blanks bound in book form when they first came from the printery. The book is convenient in size, it can be inserted in a reasonably large pocket, can be carried into the field, or can be taken with one to fruit shows, horticultural meetings, and other places where there are interesting varieties to be described. In this way one is able to pick up a large number of descriptions which he might not otherwise get. I am sure that every enthusiastic horticulturist has felt that he carried away less information from a good fruit show than he was entitled to, and he has doubtless thought within

himself that if he had had some good method of taking notes of the varieties which he saw exhibited he could have done better. This way of having description-blanks in book form and of desirable size for carrying in the pocket serves this purpose very well indeed. For the average fruit-grower who does not care to keep very many descriptions and who would not think of undertaking an elaborate filing system, the simplest and most convenient way to preserve these descriptions is to have them bound up in covers.

As soon as the work of descriptive pomology begins to assume anything like considerable proportions, it becomes necessary to adopt some other system. The one which naturally suggests itself and which is undoubtedly the best is the card-catalog system now applied to almost all lines of business. This is the system which is in use at the department of horticulture at the Massachusetts Agricultural College, and to the best of my information in all other colleges and stations where systematic pomology has been put upon a business footing. It is with this method of filing in view that I have particularly recommended the five by eight inch blank. All the manufacturers of card-catalog cabinets and apparatus keep in stock a standard cabinet having drawers of this capacity. The five by eight inch card is one of the standard cards and can be bought of these same supply houses. It may be had either blank or printed according to any desired form. For myself I am using a small four-drawer cabinet which I bought of the Globe-Wernicke Company here in Boston. Each drawer has the capacity of one thousand to two thousand cards depending upon the thickness of the sheets used, and the number of indexes required. The whole method of indexing and arranging these cards may be very readily worked out by each person for himself.

The larger and more elaborate blanks, already referred to as being in use in the Department of Pomology in the United States Department of Agriculture, are stored in Shannon files. Every business man knows what these are, and these also may be bought from the manufacturers who supply the various styles of filing devices to business houses.

Pomological Nomenclature.

It has often been remarked that one of the first necessities for the progress of a science is a stable nomenclature. In this respect it can not be said that pomology has thoroughly vindicated its right to be known as a science. Its system of nomenclature has not been all that could be desired. Even though the botanists and zoölogists often make themselves ridiculous in these matters they have at any rate a better system for doing it than we have in pomology. The only rules of pomological nomenclature which have received any official sanction from any horticultural body in America are the rules of the American Pomological Society adopted many years ago. These apparently were intended more as a guide for the labeling of the fruit displayed at the Society's exhibits than as a set of rules for controlling the practice of systematic pomology in the country at large. It will not be necessary to bring up these rules at the present time for analysis and criticism, but it may be said that the American Pomological Society has recently appointed a committee with a view to their revision.

In the meantime this whole subject of pomological nomenclature has come up for considerable discussion and suggestion in unofficial quarters. Two or three years ago there was quite an outbreak of discussion on this subject in the horticultural journals and important contributions were made to horticultural societies on this same topic. The most notable, because the most definite, results were secured by the Horticultural Club at Cornell University known more widely and familiarly as the Lazy Club. During the winter of 1898–'99 this question was widely discussed and an unofficial committee was appointed to draft a system of rules of nomenclature which might be suggested as covering the ground more fully. Professor L. H. Bailey and Professor John Craig acted on this committee so that there was really some talent represented. The present speaker had the honor of being one of the committee, and Professor S. A. Beach of Geneva, N. Y., was also present when the rules were discussed. Other men of horticultural reputation such as Professor S. W. Fletcher of West Virginia, Professor K. C. Davis of Wisconsin, and the late J. H.

Cowen of Colorado, also took active part in the formation of this set of rules. These rules were somewhat widely published and discussed outside the club in which they originated; and, although they have not received any official authorization from any state or national source, so far as I know, they are, I believe, the best expression of the fundamental principles of nomenclature which has yet been furnished in this country. Furthermore I think it not unfair to say that they represent more nearly the practice of the best systematic pomologists of this country than do the rules of the American Pomological Society.

Because this matter of nomenclature is of such great importance, and because a full and free discussion of it is especially desirable at this time, I shall present the Lazy Club rules for your consideration without further comment. I think it will not be necessary to explain the meaning of any of the rules or observations which follow them; and it will probably be entirely unnecessary to present the arguments for or against any of the particular propositions. It seems to me that since the thing now especially to be desired is the official recognition of some good rules of nomenclature, either those given herewith or something better, it would be especially becoming for the Massachusetts Horticultural Society to give this matter close attention. I most respectfully suggest, therefore, that the proper committee of this Society might do a real public service if it would give early and thorough study to this whole subject.

CODE FOR POMOLOGICAL NOMENCLATURE.

FORM OF NAMES.

1. The name of a variety of fruit shall consist of one word, or at most of two words.

In selecting names, simplicity, distinctiveness and convenience are of paramount importance. Pitmaston Green Gage and Louise Bonne de Jersey are neither simple nor convenient. Gold, Golden, Golden Drop, Golden Beauty, Golden Queen and Golden Prune, all given to different varieties of plums, are not distinctive.

The use of such general terms as seedling, hybrid, pippin, beurre, damson, etc., is not admissible.

Nouns must not be used in the possessive form. McIntosh's Red, Craw-

ford's Early, Bubach's No. 5, must be written McIntosh Red, Crawford Early, and Bubach.

Numbers are to be considered as temporary expedients to be used while the variety is under trial.

The name of no living horticulturist should be applied to a variety without his full consent; and the name of no deceased horticulturist should be used without the general agreement of living horticulturists.

An author publishing a new variety should use the name given by the originator, or by the introducer, or else should choose the oldest discoverable local name, providing such name may be conformed to these rules without loss of identity.

2. In the full and formal citation of a variety name, the name of the author who first published it shall also be given.

Names would then take such forms as the following: Summer Queen, *Coxe*; or Henry (Jerolaman); or Sophie (J. W. Kerr, Cat., 1894); or America, Burbank, *New Creations* 1898, p. 5.

It is expected that such citations of names will be used only in elaborate works on pomology, in scientific publications, or in cases where they are necessary for clear discrimination of synonyms.

PRIORITY.

3. No two varieties in the same group shall have the same name; and the name first published for a variety must always be used to designate it. All names subsequently published must stand as synonyms.

The term "group" as here used shall be held to designate the large general groups specified by words in common language, such as raspberry, plum, apricot.

PUBLICATION.

4. Publication consists in (*a*) the public distribution of printed name and description, the latter giving distinguishing characters of fruit, tree, etc., or (*b*) in the publication of a new name for a variety properly described elsewhere.

Such a publication may be made in any book, bulletin, report, trade catalogue, or periodical, providing the issue bears the date of its publication, and is generally distributed among nurserymen, fruit-growers and horticulturists.

REVISION.

5. No one is authorized to change a name for any reason except when it conflicts with these rules.

Classification of Varieties.

"Science is classified knowledge." This is the old definition and is undoubtedly a good one. If all our study of systematic pomology is to arrive to the dignity of a science, therefore, it must culminate in a reasonable classification. It is not sufficient for us to gather together a lot of miscellaneous information about varieties and to have our observations labeled with the correct names, but it is incumbent upon us to see that this information is scientifically arranged. Some system of classification is therefore the final and, perhaps, the most important step in our whole work.

We have been making some progress in the matter of pomological classification. Some of our varieties have been thrown into groups more or less homogeneous, convenient and satisfactory. Our knowledge of peaches for example has been greatly enriched by two recent publications of a systematic and classificatory nature. One of these is Professor Powell's monograph on the Chinese Cling group, and the other is Professor Hume's monograph on the Peen-to group. Each one of these writers has pointed out a number of varieties which are so closely related that they may be classified into a single group. There are other groups of peaches like those of the Honey type, the so-called native or Indian peach of Georgia, etc., which remain to be monographed; but at any rate the works of Professors Powell and Hume sufficiently exemplify the principle which we have in hand. Doubtless the plums have been treated to a more thorough ransack in respect to classification than any of our other fruits. We have no end of classificatory groups fairly well understood, such as the Domestica plums, the Japanese plums, the Wildgoose group, Chicasaw plums, Americana plums, etc., etc. It is rather odd that the work in classification should have progressed so much farther in this comparatively unimportant group than in other classes of fruits, such as apples, which are of more economic value and general interest. There is a reason for it, however, which may appear in the course of the discussion.

If one examines these classifications already cited and the others which have been devised for American fruits, he will find that

the most of them are practically botanical classifications and are not really placed upon a pomological basis at all. The distinctions are often drawn entirely from the consideration of species and have been worked out by the botanists for their own ends. This is particularly the case with the plums, which have originated from a large number of different botanical species.

If we take up some more homogeneous species, and one which is the legitimate property of the pomologist, such as the apples or pears, we shall find our present classification meagre and inadequate in the extreme. We very much need some system of classification for these fruits and the present dearth of our knowledge is evidently due, not to the fact that this need had not been felt, but to the large and imminent difficulties of the problem. The only general classification of apples ever attempted in this country has been that proposed by Dr. Warder in his famous book. Perhaps I ought to make some exception to this statement of the work of Thomas and one or two others, but the Warder classification is the only one which has gained any general notice. It is still used frequently for the want of anything better, but always with the feeling of its imperfections uppermost in the user's mind.

If we approach the subject of classification to see what its underlying principles are, we shall find that there are two systems, quite different from one another, but both applicable to any group of fruits. The Warder classification already mentioned may be taken as the type of the artificial method. According to this scheme, fruits are arranged in classes according to some one character at a time in which they accidentally agree. These characters are arbitrarily selected and the arrangement is, therefore, artificial even when most complete. The term artificial is especially justified by the fact that the varieties are not taken into groups according to their natural relationships.

Opposed to this method we have the natural system of classification which endeavors to place together those varieties which are most closely related by nature. It is assumed that those which have similar pedigree will for the most part show the largest correspondence in external characters, and though this assumption sometimes leads one astray it commonly conduces to

bring together those kinds which are really the most alike. The operation of the natural system of classification will be better understood if I cite one or two examples. Amongst apples we have the Ben Davis group of varieties including Gano, Black Ben Davis, Beach, and one or two others, all of them very much like the typical Ben Davis and several of them thought to be seedlings of that variety. These several varieties all agree in a large number of common qualities. They are naturally related. They are much alike. It is convenient to speak of them together.

We have also the Fameuse group of apples, containing a large number of varieties which are somewhat more plainly differentiated from other groups than those of the Ben Davis type already cited. In this group we have McIntosh, Princess Louise, Shiawassee Beauty, La Victoire, and several others.

If it were feasible to put all our apples into similarly marked and homogeneous groups according to their natural or apparent relationships, we might soon have a systematic and reasonable classification. There are many difficulties in the way, however, which seem to be almost insuperable. Undoubtedly much can still be done along this line and it is to be hoped that our American pomologists will give the subject the attention it deserves. But we may not deceive ourselves with the hope that the whole thing is to be cleared up immediately.

Before dismissing finally this comparison of the artificial and natural methods of classification, it may tend to make the subject clearer if we recall the fact that these two methods have both been extensively tested in botany. Those of you who are students of systematic botany will remember the enthusiastic and sometimes violent discussions which have gone on between the supporters of Linnaeus, Jussieu, and De Candolle, not to mention more modern names. The merits of these discussions have always centered on the comparison of the two methods of classification, the artificial vs. the natural. The student of systematic botany will remember further that botanical science in general has practically adopted a compromise of the two systems. The natural classifications like those of Engler and Prantl are followed very largely in the arrangement of books, herbaria, botanical gardens, etc., while in the construction of keys, indexes, and other short-

cuts for tracing up species the artificial method has been adopted. We see this nicely illustrated on a small scale in our Gray's Manual. To a certain extent the groups are arranged in a natural sequence; but at the beginning of each family or large genus we have an artificial key for tracing out unrecognized forms.

I mention these things not so much as matters of general interest, but because they point out very clearly the methods which we must adopt and which we must follow up probably for years before we shall have placed systematic pomology alongside of systematic botany where it belongs.

Conclusion.

I hope that the members of the Massachusetts Horticultural Society will not think me too officious if I make another somewhat personal plea to them. I am deeply interested in the progress of systematic pomology in this country. I have done what I could to have the subject taken up in a larger and more effective way by the colleges and experiment stations throughout the country. But it seems to me that the stronger and better endowed horticultural societies have a large and inviting opportunity to render aid. This Society holds some of the best and most notable fruit exhibits on the continent and has the opportunity, therefore, to secure many excellent descriptions of new and old varieties not only from this state but from other districts. I believe that the officers of this society, especially the secretary, are often called upon to identify varieties. This they could do much more expeditiously and satisfactorily if they had a suitable file of descriptions for reference. Moreover the specimens which are received from day to day in the course of this work might often be made the material for new descriptions and so the collection would go on increasing from year to year. A collection of variety descriptions like this in the hands of a pomologist is what a good reference herbarium is in the hands of a working botanist. I see no reason why the Massachusetts Horticultural Society should not become famous for its great collection of fruit descriptions just as the Gray Herbarium has become famous for its fine collection of types and local floras.

The general interest in pomology at the present time is so much attached to the practice of fruit growing that I feel compelled as a final word to assert the importance of systematic pomology to the business of the practical fruit-grower. If anything is evident from recent developments of fruit growing, it is that we require a more extended and intimate knowledge of the varieties which we handle. It is all very well to plant Ben Davis if a man likes that kind of fruit-growing. Ben Davis will succeed anywhere. It requires no intimate or expert knowledge of any kind. But if fruit-growing is put upon only a little higher plane and we begin to seek for varieties of higher quality which may be grown to perfection in different climates and under different circumstances, we shall find that much deeper study of the subject is required.

In order to get such knowledge as the present advance of practical horticulture makes necessary, we must proceed on some logical plan. We must in other words take up seriously the study of systematic pomology. A haphazard knowledge of varieties will no longer meet our needs.

Last of all I wish to remind you that all the great books on pomology ever written in America are really chiefly concerned with the systematic part of the subject. They are not, as we might suppose, treatises on how to grow fruit. The old books of Prince, Cole, and Kenrick, which ought to have been devoted to the practice of fruit-growing if any books ought to have concerned themselves with that subject, were for the most part descriptions of varieties. The great work done by Hovey, the Downings, Warder, Thomas, Manning, and the other great pomologists of America was done chiefly along systematic lines. The fact that these books have lived and have kept their influence to the present day ought to be some encouragement to us in going back to the subject of systematic pomology.

Discussion.

Benjamin P. Ware said that he would be glad to make some special inquiries of the lecturer. How much has been done towards this system of classification and how much progress has been already made in bringing it to practical use?

Professor Waugh replied that not much progress had been made, as the system of filing descriptions was begun only last August, but since that time five hundred forms had been filled out.

Mr. Ware continued, saying, that a system like the one proposed would be valuable to the Society, and a help toward the identification of fruits sent in. The problem is how can we get it and how can it be carried out? It is hard to identify fruits from Downing's book, which is not sufficiently clear, good authority as Mr. Downing undoubtedly was. Mr. Ware said that his point was how to get at the information and that he knew of no other way at present except to send our doubtful fruit to Amherst for identification.

E. W. Wood said that we can infer from the lecture this morning what our boys at the college are receiving. While we have this instruction for an hour they have it all the time.

In the matter of the nomenclature of fruits this Society has adopted as its authority the works of Downing and the reports of the American Pomological Society.

The importance of the matter of correct names of fruits we see very strongly at our exhibitions. Prizes are offered for certain named fruits and it is singular to see the names sometimes applied to the specimens. They come in under all manner of names and much of the fruit exhibited is wrongly designated. The question often arises, Shall we award the prizes for those exhibited under wrong names? Prizes are repeatedly awarded for wrongly named specimens. We should have accurate names for it is a satisfaction to know that the varieties exhibited are correctly named.

Sam'l H. Warren called attention to the proposed rule for omitting the use of numbers in the names of fruits. He said that this was his fiftieth year in the cultivation of strawberries and that he found the use of numbers very convenient in referring to certain new varieties.

To speak of the Bubach strawberry would not designate a particular plant as Bubach had produced seedling plants, which had been put on the market, numbered as high as 128, and his Number 5 had been especially well known.

Professor Waugh stated that the variety of strawberry mentioned was now known simply as the Bubach, the number "5" being dropped, as the other varieties were not now in general cultivation.

We ought not to keep a long series of numbers. We should send out new plants under new names and drop the numbers, as Rogers has done in his grapes, substituting names for numbers.

Thomas Harrison referred to the fact that the same variety of fruit cultivated under the same name in different localities is subject to great variation in quality and appearance.

The lecturer stated that it was a practice in general exhibits to show apples under the name given to them in their original localities, but in the fruit market it is the custom to draw fine distinctions; for instance, it has long been a question whether the Newtown Pippin and the Albemarle Pippin were really the same apple. He had investigated the matter and had found that they were both the same but from different localities, one growing in Albemarle, Virginia, and the other in New York State.

Look at the market reports and you will see State Greenings and Vermont Greenings, identical kinds, but the latter quoted at from fifty cents to one dollar a barrel higher.

Mr. Harrison asked if the lecturer had known any variations in grafted fruit. Professor Waugh replied that he had noticed several such instances and that one should be compelled to exhibit under the name of the graft but should explain the circumstances.

William H. Spooner called attention to similar difficulties in rose growing. The Jacqueminot and American Beauty roses are quite different plants grown in the open from those grown under glass. You will have to allow for differences in cultivation.

President O. B. Hadwen thought that the lecturer had a great work before him, as he had seen many different kinds of Baldwin apples growing on the same tree, and each kind would have to have a different description.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 31, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. Vice-President BENJAMIN P. WARE presided and the following lecture was delivered:

WHAT THE UNITED STATES DEPARTMENT OF AGRICULTURE IS DOING FOR THE FARMER.

BY PROFESSOR C. S. WALKER, AMHERST, MASS.

The human mind creates its own concepts. 'T is strange such difference should be between *a* farmer and *the* farmer. A particular individual from a distant hill town is *a* farmer, but he is not *the* farmer. The farmer to which our subject refers is a concept which our minds create.

A few years ago the junior class of the Massachusetts Agricultural College had its picture taken, not in a group of individuals, but in a composite photograph. Each man's face was photographed on the same part of the single negative; the result of thus superimposing one picture upon another was a portrait of no single person, but a composite photograph made up of the features of all, blended together in one. What the artist did in this instance the human mind is continually doing. Its concept of *the* farmer is different from *a* farmer. *A* farmer is ignorant; *the* farmer is intelligent. *A* farmer is lazy; *the* farmer is industrious. *A* farmer is a bankrupt; *the* farmer is successful. The mind summons before it a long procession of individual farmers, fixes its attention upon different traits and characteristics of these men, rejects much and retains many distinctive elements, out of which it constructs for itself the farmer, the typical farmer, the ideal farmer. This concept is a reality of great practical use. It is folly to say that, because the ideal farmer cannot be seized by the hand and led out on the platform to be seen and questioned, he is a myth and a delusion. The ideal farmer, the typical farmer, *the* farmer is a mighty force, making for the advancement of agriculture and for the pecuniary and moral

prosperity of each individual farmer within the realm of its influence.

So we know what we are talking about when we speak of the Massachusetts farmer, the New England farmer, the southern farmer, the western farmer, the American farmer. The human mind has created out of its New England farmer, its southern farmer, its western farmer a still more comprehensive ideal, involving the excellencies of each, which it has named the American farmer.

The human mind has contemplated the British farmer, the German farmer, the Russian farmer, the French farmer. Among these the American farmer stands out preëminently the intelligent, the forceful, the successful farmer of the world.

How does it happen that the American farmer has come to the front at the beginning of the twentieth century? These competitors of his started in the race generations before he did.

Out of many answers to this question one is worthy of our consideration this morning. Because of what the United States Department of Agriculture has done and is still doing for the American farmer, it comes to pass that he holds first place today.

But, what is the United States Department of Agriculture? What presents itself before your mind when I utter the long-sounding phrase, the United States Department of Agriculture? Is it a big blue book filled with pictures, figures, and words? Is it a man with a butcher knife stamping out the foot and mouth disease? Is it a big brick building in the city of Washington? Is it Uncle Jerry Rusk, leaning back in his chair in an inner room in that big brick building? Is it the present Secretary Wilson asking for an appropriation of $5,509, 540, for the benefit of the American farmer?

The United States Department of Agriculture is a phrase which stands for another concept of the human mind. It is an idea that is complex, but none the less real. It is more than buildings, more than a secretary, more than a group of men, more than an annual appropriation of millions of dollars. The department is an important part of the executive branch of the United States government. Its secretary is a member of the cabinet of the President. Men come and men go, old buildings give place to

new, one problem solved is followed by new perplexities, but the department is a vital organism which does not die. It is the best thought and determined purpose of the American people, efficiently applied to the solution of the problems of agriculture and to the promotion of its interests. While the department helps the farmer, the department is itself the product of the American farmer.

The Department of Agriculture under the direction of Hon. James Wilson, a member of the President's Cabinet, employs 3789 persons, devoting their time, talents, and strength to the promotion of agriculture. Of these, 2081 are scientists and assistants.

There are bureaus of animal industry, of plant industry, of forestry, of chemistry of soils, and the weather bureau. These are subdivided into many divisions. There are also independent divisions, offices, and sections, such as the section of foreign markets, the office of experiment stations, the division of statistics. For the support of these the government appropriated for the present year $4,503,960 in addition to $720,000 for the maintenance of the agricultural experiment stations and general printing expenses.

At the close of the eighteenth century the English landlords did much for the benefit of agriculture. Supported by the large sums received from the farmers for the rent of agricultural lands, they formed an aristocracy whose leisure time was given to devising ways and means for increasing the productivity of the soil. They succeeded so well that the production of wheat was doubled and the amount of general produce trebled.

In America the landlord system has never been established. The English farmer rents his land of the landlord, employs the agricultural laborer, while he himself furnishes, or borrows the capital, and is his own *entrepreneur*, or business manager. The American farmer on the contrary embodies all four functions in himself. He owns his land, being his own landlord, supplies his own capital, works as a manual laborer, and is his own superintendent. The average farmer, therefore, has little or no time to devote to discovering new methods in agriculture and no money to risk in experiment. His capital is too small to invest

in extensive improvement the profits of which cannot be at once realized. Again agriculture does not admit of coöperation, combination, and the forming of monopolistic corporations as do trade and manufactures. Hence the average farmer has been forced to sell in the cheapest market and to buy in the dearest market. He has not succeeded in securing for himself that share of the total product of wealth to which, it would seem, he is justly entitled. The remuneration of the banker, of the manufacturer, of the railroad man, of the merchant, of the professional man, of the miner, seems large in comparison with that of the tiller of the soil.

The modern captain of industry has at his command a corps of scientific experts to solve his problems for him and show him how to overcome difficulties. It is true that the individual farmer cannot keep a corps of scientists in his pay, subject at all times to his call. But what he cannot himself do, the government has already done for any and every farmer who has enterprise enough to avail himself of the work of the United States Department of Agriculture, carried on at an annual expense of over $5,000,000, for the solution of any and every problem the American farmer may propound.

The facilities of this great department are open to whomsoever chooses to avail himself of them. There is no obstacle the farmer has to confront which the department will not help him surmount. A corps of trained experts, equipped with the best instruments, is kept constantly at work for the benefit of the farmer in every department of agriculture.

Let us see now what the department is actually doing for the American farmer.

I. The department in the bureau of soils makes a study of the chemical and physical constitution of the soil. In the laboratory scientists investigate the relation of plant food to the growth of the crop and also what physical condition of the soil is best suited to the particular crop. Then surveying parties have been sent out into many states to examine the soil and make maps upon which are indicated the nature of the soil. This land is marked as suitable for fruit; that section as adapted to tobacco; this for figs; that for almonds. These surveys reveal the value of the

soil and its deficiencies, and what remedies should be applied, and what use may best be made of it. It shows how to reclaim alkali lands.

During the past year surveys of this sort have been made in twenty-six different states, of 14,541 square miles, at a cost of $26,551.

One of the most important parts of a farmer's business is that he should know the soil of his farm, what sort it is, what it is good for, and how it may be improved. It is very possible that a man may become poor on a most excellent soil, because he does not know its value nor how to utilize it. If he will make use of the hints and helps furnished him by the department, he may acquire an adequate knowledge of every part of his farm.

There was much discussion a few years ago of the abandoned farms of Massachusetts. What an excellent plan it would have been to have called upon the United States Department of Agriculture and have had it send one of its surveying parties to examine these lands, report upon them, and plot them upon maps. The surveyors would have told us which lands were suited for apples, where peaches could be grown; they would have discovered valuable tobacco lands; they would have indicated how the neglected areas might be best utilized.

In the Yazoo delta in Mississippi the surveyors discovered that the sandy loam is a typical early truck soil and that with the prevailing climatic conditions potatoes, or other truck crops, may be profitably raised. In Missouri it was found that the soils are remarkably uniform and that fruit interests may be extensively developed. In other states similar surveys have been completed. The surveys in Illinois have been so valuable that requests for more than 25,000 copies of the report have been made. No work of this sort has been done in Massachusetts since 1899, but next season it is proposed to spend three months surveying the Connecticut valley in the interests of the tobacco growers.

II. The department maintains a bureau of plant industry whose work is to assist the American farmer in his efforts to grow the best plants and protect them from destructive diseases.

Its first assistance is the procuring of good seed of profitable plants. Especial attention has been given to securing and

distributing forage crop seed, cotton seed, tobacco seed, and seed of other special crops. Agents have been sent to India, China, and Japan to get new seeds and plants for the purpose of introducing new industries to our country. Macaroni seed wheat has been successfully introduced from Italy. This has produced 2,000,000 bushels the past year. It yields from one-third to one-half more than our standard varieties and makes possible the growing of wheat much further westward over districts of great extent where wheat has hitherto failed to grow.

The introduction of new varieties of rice in Texas and other parts of the South has proved beneficial. The introduction of Japanese rice has resulted in the production of a crop worth a million of dollars and the investment of $20,000,000 in the industry.

The Jordan almond has been successfully introduced into California. The culture of tea in South Carolina is making good progress: 9000 pounds of marketable tea were produced last year.

This bureau of plant industry aims to be of especial assistance to the fruit grower. It is constantly studying problems connected with the production, cold storage, and marketing of fruit. It has conducted surveys to discover the best fruit growing areas in Virginia, Maryland, and Pennsylvania. What hastens and what retards the ripening of apples, peaches, pears, and other fruits kept in storage have been made the subjects of careful investigation.

It has also made an especial study of plant diseases. The cotton in the Sea islands of South Carolina began to die out. The planters appealed for help. A scientist was sent. He found that a fungous growth at the root was the cause. He was ordered to spend four years in that locality studying the problem until by selection and cross breeding he may produce a plant that is immune, or else find another remedy. The peach growers of Michigan complained of a new disease destroying their orchards. The department experts, taking a hint from the cotton disease, found a similar fungus at the root of the peach trees. To remedy this evil the department will import peach trees from Asia and from them develop a hardy stock that will be immune. To help the orange growers of Florida the department is engaged in developing a hardy orange tree that will endure the frost.

Another very useful office in the bureau of plant industry is that of farm management. The men employed collect the facts concerning the best paying farms in the country. They find out how these farms are managed, what are the conditions affecting them, such as proximity to markets, the nature of the climate, the land tenure, and methods of cultivation. They also take advantage of all the knowledge acquired by the several bureaus of the department and apply it to the necessities of the given case. Thus prepared they will make a working plan for a particular farm in a given locality. The farm that is thus managed becomes a model farm for that community. By such means it is hoped that the southern planter, the western farmer, and the New England agriculturist may be taught how to succeed in their occupation and keep abreast of the progress of the day.

III. The division of entomology has been of great assistance to the farmer in his fight to save his crops from whatsoever creepeth upon the face of the earth, and his live stock and poultry from parasites, and himself from disease and death engendered by the noisome mosquito and the pestilential fly. It goes even farther and endeavors to make insects the allies of the farmer in his endeavor to create wealth.

The fig fertilizing insect imported from Smyrna to California, has made it possible to produce tons of figs on the Pacific Coast. Japan and China have been explored and from these eastern countries the ladybird has been imported that it may help the farmer destroy that destructive pest, the San José scale. Dr. L. O. Howard, chief of the division, has spent the past summer in France and Italy studying the silk industry of those countries in order that he may teach the southern farmer how to cultivate mulberry plantations, breed silk worms, and reel the silk from the cocoons. From Austria and from Cyprus bees have been imported which have gathered a crop of honey double that collected by the best Italian bees. Moreover crosses have been made which have secured promising strains that make good honey and prove to be less irritable and more gentle in disposition.

It has been shown that the mosquito is the cause of much malaria in the human system and that flies may carry contagious

diseases from man to man and from beasts to humans. Methods of ridding ourselves of flies and mosquitoes have been discovered and the results published for those seeking information and advice.

The life histories of the Mexican cotton ball weevil, of the codling moth, of the bark beetle that destroyed 600,000,000 feet of pine timber in the Black Hills have been studied and remedies suggested. Work on insects injurious to shade trees, to truck crops, to stored products, such as flour, cigarettes, and tanned leather has been carefully conducted with good results.

Much has been accomplished in the testing of the various insecticides put upon the market. Many of these have been shown to be useless as well as expensive. It has been demonstrated that houses may be fumigated with hydrocyanic acid gas for eradicating household pests and for disinfecting apartments. But the gas must be used with caution and strictly according to directions.

IV. The biological survey has been carried on with the purpose of finding out the geographical distribution of mammals, birds, and plants as affected by climatic conditions. This survey discloses the curious fact that the biological zones in California often run north and south instead of east and west. In crossing the state from the coast to the interior one may traverse all kinds of climate from that of the desert of Sahara to that of the arctic region, with flora and fauna to correspond.

The destruction of coyotes and the larger hawks on the western plains has been followed by the multiplication of prairie dogs to such an extent as to cause great loss. How to get rid of these has been told in an article prepared by this division of the department.

The section of economic ornithology has shown which birds are the farmers' friends in helping him in his fight against destructive insects.

V. The bureau of animal industry is one of the most important in the department. To it is assigned the duty of investigating diseases affecting live stock and of discovery and applying remedies for the same. It inspects animals and animal products which are to be used for food and shipped from state to state

and to foreign lands. It is to promote the interests of the dairy and to advance the animal industries of the country. The bureau includes six separate divisions, each under the direction of a chief; also there are the experiment station and the editorial office. The editor prepares and publishes the volume annually which contains the report of the work of the various divisions of the bureau. The station is located at Bethesda, Md., on a small farm where is produced the serum for the cure of hog cholera and swine plague and conducts experiments with reference to Texas fever.

The work of the chief of this bureau, D. E. Salmon, in stamping out the foot and mouth disease in Massachusetts this past season, has made us familiar with the efficient and valuable service that is rendered to the American farmer when his flocks and herds are endangered by contagious disease.

The biochemic division employs a corps of scientists who are constantly preparing remedies for diseases and liquids for the production of flavor in butter and cheese.

The dairy division has for its chief, Henry E. Alvord, well known as a Massachusetts man, at one time professor of agriculture in our college. For a number of years he has been indefatigable in promoting the dairy interests. He has been of great assistance in establishing creameries, conducting dairy schools, enforcing laws for the protection of the dairyman, and extending the market at home and abroad for butter and cheese. During the past year experimental shipments of dairy products have been made to Japan, China, Cuba, and Porto Rico.

The inspection division prevents poor meat products from being sold in the markets and makes possible sales in foreign lands.

The zoölogical division studies the habits of parasites and the nature of diseases resulting from their attacks.

VI. The bureau of chemistry is one of the oldest bureaus of the department and its work is intimately connected with the work of all the other bureaus and divisions. It has a food laboratory, a sugar laboratory, a dairy laboratory, a road material laboratory, a dendro-chemical laboratory, and a laboratory for miscellaneous coöperation. The bureau has charge of all chemical work relating to agriculture. Its large corps of chemists is kept constantly at work.

The subjects of investigation include soils, fertilizers, and irrigation waters; agricultural products; insecticides and fungicides; the foods of men and of the lower animals; the raw material products, and processes of the agricultural chemical industries; the materials used in road construction; imported foods, and food products intended for export.

VII. The bureau of forestry is a recent addition to the department, created to meet the demand of the American farmer for help in preserving the forest so essential to profitable agriculture. The forest has been ruthlessly attacked by man and insects and fire. For the common good and for the preservation of our civilization the forests must be saved.

This bureau is composed of the divisions of forest management, of forest investigation, and of records. To meet expenses an appropriation of $185,440 was voted by Congress for last year. In the work one hundred and sixty-two men have been employed in forty-two states and territories. Advice is given to owners of forests who desire to have them managed in accordance with scientific methods. Plans have been prepared for the management of 372,463 acres. A plan is now in preparation for the management of a tract of 1,250,000 acres in southeastern Texas, the largest tract owned by a private party in the United States. The Secretary of the Interior depends upon this bureau for plans for the management of the forests owned by the United States.

Investigation of better methods of making turpentine has shown how the work may be done with less injury to the trees, than heretofore has seemed necessary.

A large collection of forest literature has been made and also a collection of six thousand photographs.

The bureau encourages the farmer to plant trees and renders valuable assistance in the work. There have been applications from two hundred persons for assistance in tree planting. Examinations of 200,000 acres have been made and two hundred and twenty-four plans for 6400 acres have been formed.

In New England the question of the possibility of planting cheap lands with white pine has been considered, and has led many owners of land to begin plantations of white pine.

This bureau has shown that the destruction of Appalachian

forests has caused a loss of $20,000,000 in twelve months, that mill privileges worth $20,000,000 are being destroyed; that soils are being washed away. To prevent these losses it is proposed that the government shall reserve large forest tracts on the mountains.

VIII. The weather bureau is now a part of the Department of Agriculture. Its forecasts of the weather have proved of great value to the farmer, warning him of frosts, of hail, of coming floods, of blizzards, of tornadoes, of all of those changes which affect favorably or unfavorably the work of the agriculturist. This bureau keeps a record of the condition of the growing crops in all parts of the country and reports weekly. Its data enable the farmer to form a reliable opinion as to the climatic conditions of any region which will make it possible or impossible to successfully produce a special crop in that locality.

IX. One of the most useful divisions of the department is that of statistics. John Hyde, the chief, has under his immediate direction one hundred and thirty experts and 250,000 correspondents. The correspondents write him from all parts of our country and from many parts of foreign lands. He keeps informed of all the essential facts relating to the condition of the various crops at home and abroad and as to the growth and products of live stock. Rates of transportation on cars and vessels are published. The range of prices is found out and reported. The services of this division are made use of to a great extent by middlemen and speculators, often to the detriment of a farmer who does not know that there is such a publication as the "Crop Reporter" packed with valuable information and printed every month for his especial benefit.

X. The office of public road inquiries has been doing a wonderful work lately for the farmer. It shows the cost of bad roads and the value of good roads; demonstrates the profit to owners of city property of money expended by them on country roads; organizes all classes of the people in a crusade for good country roads; tells what has really been accomplished in building good roads in different parts of the country and shows how other parts of the country may get the same advantages; discovers excellent road material in the immediate vicinity of the

poor highway; oyster shells in the South, trap rock in New England, gravel elsewhere; discusses new plans for road improvement and encourages experiments in the right direction.

Under its direction road conventions have been held in the southern states. Special trains loaded with all the best machinery for the construction of good roads and carrying a corps of skilled workmen and scientific experts and lecturers and business men have been sent from place to place giving object lessons in the construction of good roads. By such means the people of Virginia, Georgia, Alabama, Tennessee, have been astonished and delighted, and made converts to the determined movement for good roads and cheap transportation of passengers and products from the farm house to the market.

XI. The section of foreign markets, under its chief, Frank H. Hitchcock, has been for years working in season and out of season to extend the market for the products of American farms among all the nations of the world and to retain the markets already gained in spite of persistent attempts to drive American products out by means of a high tariff, or that feeling, by the pretext that the products are diseased and unwholesome and must therefore not be admitted beyond quarantine. In this work this section has been ably assisted by all the other divisions and bureaus of the Department. All have coöperated to this end so efficiently that during the past year the export of agricultural products amounted to $860,000,000.

XII. The office of experiment stations, under the direction of A. C. True, has in charge those matters which relate to the coöperation of the department with the many experiment stations in the several states, supported by federal grants, and with the land grant agricultural college. This office is the headquarters of these institutions which with their splendid equipment, liberal endowments, and trained corps of scientists and learned faculties are doing so much in the line of original investigation and in the way of the agricultural education of young and old. About forty years ago Senator Morrill of Vermont committed the national government to this wise policy of agricultural education and investigation. The results so far have abundantly justified his action and have won for him great honor. But at the close of one hundred years what magnificent results may we not expect.

The United States Department of Agriculture is not to be separated from these institutions. It includes them all. They and it are one. Each depends upon and supplements the other. The colleges furnish the department with scientists. The department is a post graduate school for the Bachelors of Science, and a field for the life work of the Doctors of Philosophy.

To this office of experiment stations has been assigned the investigations and work relating to irrigation and agricultural engineering. A great work is this indeed. It comprises no less a task than the transformation of the Great American Desert into a paradise, populous with a happy people. Men have been sent to Egypt to study the irrigation system of the delta of the Nile and the laws that secure the rights to water. Engineering problems relating to the storage, the transfer, the utilization of water for the production of crops have been studied, and, in a measure, solved. Shall the canals be cemented to prevent waste? How shall the destruction of farms by the absorption by water of alkaline deposits be prevented? Irrigation is called for in the South as well as in the West.

Irrigation has given rise to a demand for engineers to instruct the farmer how best to apply forces of nature to his service. How shall he utilize his windmill? How may he work with electricity? How can he get the most out of his water power? What machinery can be profitably used? These questions are constantly asked the department, so that it is driven to ask the government for a new division of agricultural engineering, with engineers who shall go to the farmer and show him how to harness the forces of nature and make them toil in the field for the production of wealth.

XIII. Lastly there is the division of publications. Its work is to publish the results of the labors of the department in all its various bureaus, divisions, sections, and offices. To do this work necessitates the employment of a large force of editors, proof-readers, compositors, artists, engravers, photographers, equal to that of our largest publishing houses. One item of printing last year was 3,345,000 copies of farmers' bulletins which give in popular form the most practical results of scientific farming. The Year Book of the Department of Agriculture, containing 846

octavo pages, profusely and beautifully illustrated and packed with valuable information, expressed in a clear and interesting style, could not be published by Harpers' for less than ten dollars. Yet it may be had for the asking by any farmer who appreciates its worth. But this is only one of its many volumes. Its list of publications would fill a volume and the books themselves make a library.

All this and more has the United States Department of Agriculture done for the farmer. This the department continues to do. In the future, as the years come and go, it will do more and still more for agriculture and the agriculturist. The territory of these United States, stretching from Behring Straits to Florida Keys and from Maine to Southern California, to say nothing of Porto Rico, of the Hawaiian and the Philippine Islands, constitutes a good sized farm. It belongs to the American farmer. It is capable of producing good crops, enough to feed and clothe and supply the growing needs of humanity. Our eighty millions shall become hundreds of millions. To provide for these is the work of the American farmer. It is no small task, but he is capable. The German farmer is a peasant. The British farmer is bankrupt. The farmers of all other lands are little better than serfs. It is the destiny of America to produce a farmer who shall hear the voice of God commanding him, "Replenish the earth, and subdue it."

The New England farmer found Massachusetts a wilderness, the home of savages, bleak and barren. He replenished it, he subdued it, and now it is the Old Bay State.

His sons crossed the Hudson, climbed the Alleghanies, spread out over the prairies, passed beyond the Mississippi, scaled the Rockies and the Sierras, and bathed in the Pacific Ocean. Behind him in his footprints grass grew, grain bowed its fruitful head, orchards and vineyards sprang up, flocks and herds multiplied, and homes were founded.

By replenishing the earth man best subdues it. He who subdues the earth conquers himself. The victor over self is a hero. He can do anything. Nature is on his side, his obedient servant.

The American farmer has wrought well. One of his best creations is the United States Department of Agriculture. He made the department: not the department, him.

But now the department, which he has formed, reacts upon himself as an instrument and means for his further development and higher education.

But how shall a farmer, the average farmer as distinguished from the farmer, make the most of the facilities freely offered him by the department of agriculture? He can at least do this: he can respect his calling and make up his mind that he will subdue his own farm by replenishing it. In this work of replenishing his own farm and subduing it, he may go into partnership with the department.

The department will help him classify the different types of soils; will show him what fertilizers are needed; will make plain what crops and fruits and animals may be raised to the best advantage; will help him understand climatic conditions and solve problems of irrigation and agricultural engineering; will make a plan for the improvement and management of his bit of forest; will help him fight insect destroyers and overcome the diseases that attack his plants and his live stock; will tell him where his best markets are to be found and assist him in building good roads and in securing cheap and quick transportation to and from his markets; will analyze his commercial feed stuffs and fertilizers and drinking water for him and prepare for him cultures for his butter and cheese and serum for his cattle; will provide new seeds and cuttings of foreign plants; will keep him informed of all the latest discoveries of science in its application to agriculture; will furnish him gratis with the latest and best publications concerning agriculture; and will put at his service a trained army of scientists capable of finding out all that needs to be known. Thus aided there is no reason why the owner of a farm may not in the course of time transform it into a home that shall not only furnish him and his family a livelihood, but shall become a delightful place to all beholding it. There is no reason why such a farm should not become an environment reacting upon the individual making him a country gentleman of culture and of a character, rightly esteemed the peer of any man.

Discussion.

The lecture was followed by an interesting and, at times, lively discussion, on the practical value of the agricultural college and of modern, scientific methods of cultivation.

Benjamin P. Ware, in his preliminary remarks said, that the farmers of New England are having a hard enough time to make a living by farming and that the United States Government is attempting to help them.

He thought we were fortunate in having the lecturer show us what was being done to aid the farmer, and that a good deal of information had been elicited.

A young man inquired as to whom he should apply for particulars concerning farm management, and for the government publications.

Professor Walker replied that letters may be directed to the Secretary of Agriculture, at Washington, and that they would be referred to the proper department. For special publications one should apply to the Congressman of his own district.

Varnum Frost spoke on the topic of the day substantially as follows:

I wish this scientific method of farming was as valuable as they are trying to make it out, but I can't see it. The United States Department of Agriculture spends five millions of dollars a year and supports four thousand employees. They get the benefit of it, while the farmer is growing poorer and poorer.

In fact scientific knowledge is not necessary for good farming. Running a farm is a simple business and can be learned by experience and observation — three-fourths of it observation.

There is no need of spending so much money as is being done by the government. I know of most successful farmers who cannot read or write.

Mr. Ware. In reply to our friend Frost, according to the statistics, not over four per cent of those engaged in mercantile business succeed. Does Mr. Frost know of a single farmer, who has attended to his own business, who became a bankrupt?

The time has come where there is no excuse for a farmer to make butter that has to be sold to the renovator for twelve cents

a pound when information is at hand that will enable him to get thirty cents for it.

A farmer today has no business to be an uneducated man. Facilities are freely offered him by the agricultural college; and the Farmers' Bulletins of the government are to be had for the asking. The money paid out by the government has been returned over and over again in the advance made in agriculture.

We do not want to go into a pessimistic discussion; it does not belong to the business, for farming is an optimistic employment.

The farmer of today should be an educated farmer, and there is no excuse for his being otherwise.

Mr. Frost. Do you think that the agricultural college can graduate a good farmer, ready to take up the work of a farm and to carry it on successfully?

Mr. Ware. Not only that, but there are hundreds of graduates who are already successfully occupying positions as superintendents and teachers, all over the country.

Mr. Frost. I have had students come to me from the agricultural college who wanted to go to work to learn the business. It is almost impossible to get a man who has been educated, who is willing to work on a farm.

Mr. Ware. They could not have gone to a better man of whom to learn the business.

Michael Sullivan. I do not like to speak in opposition to my old friend, Frost, whom I have looked up to from boyhood. When we speak of agriculture, here in Massachusetts, it is hardly worth while to compare it with that of the great West.

The work of the government is not especially valuable to the market gardener, although I have received good from it, but to the cultivators of special crops, on a large scale in the West, it is of great value. Mr. Frost takes a local view of the subject and while New England farming is not on the increase there is a living in the business today. I know men who not only make a living at it, but stand well as citizens in their respective towns, and also take a prominent place in the affairs of the state. The college at Amherst not only makes a man competent for his work but fits him for the higher walks of life. That is the kind of life I see for the New England farmer. I doubt if Mr. Frost seriously thinks as he speaks.

The Sabal Palmetto.
Isle of Palms, South Carolina. Photographed by Miss E. G. Cummings, March 23, 1902.

Mr. Frost. Farming is the tag end of all business, the last resort of broken down professional and business men who cannot get a living at their occupations and so turn to the farm as a last resort. I defy any man in Massachusetts to assume a liability of ten thousand dollars and ever be able to pay it up by farming. The business is growing less every year. What I have I earned forty to fifty years ago. There is no money in the business now.

Mr. Ward. I know of a man, a graduate from an agricultural college, who has been successful as a farmer and has made money. Things learned at the agricultural college, if the knowledge is used, will be a helpful aid to success.

Mr. Sullivan. I want to say this, I regard my farm as a savings bank into which I put the labor of every day, and it is a sure accumulation for my family.

Mr. Ware. Mr. Frost spoke one truth and paid a high compliment to farming when he stated, that when a man has failed in other walks of life, he turns as a last resort to the farm. Yes, agriculture stands open to receive him and grants him a success that he could not otherwise attain.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 14, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. President HADWEN presided and the following lecture was delivered:

CHARACTERISTICS OF SOME SOUTHERN TREES.

BY MISS EMMA G. CUMMINGS, BROOKLINE.

As we left New England in the bleak days of March, for a visit to the milder southern states, the first thing to attract our attention was the conspicuous amount of green in the landscape as compared with the prevailing brown tones of the north. The people of Virginia must have been fond of planting weeping

willows, and truly, their fresh feathery green leaves expanding so early are an attractive feature of the cities and towns. The woodlands are dotted with the deep pink blossoms of the Judas trees; a shade of pink that might not be called pretty in itself, but in combination with the green of the willows forms a pleasing scheme of coloring.

While there are other green trees than the willow, this is not entirely due to the warmer climate, where leaves open earlier, than with us, rather is it due to the fact that there are more evergreen shrubs and trees in the South. Many of these cannot grow in the North, others like the rhododendron, kalmia or mountain laurel which grow sparingly with us, clothe many a slope of the southern Alleghanies with green shining leaves, and along riverbanks the rhododendrons often make impenetrable thickets. More especially is there a greater variety of the broad-leafed evergreens, the most prominent trees being the magnolia, holly, (*Ilex*) live-oak, and palmetto.

The magnolia (*Magnolia foetida*) has been freely planted in the parks and gardens of Washington, and from there southward is both a prominent decorative feature of the cities, and conspicuous in the forest. Fine old trees of live-oak (*Quercus Virginiana*) are growing in Fortress Munroe and they entirely compose the Park along the water front in Charleston. The trunks usually divide a few feet from the ground and form many wide-spreading branches, often from one hundred to one hundred and fifty feet across.

In the early part of the last century the United States Government bought in the Gulf states large tracts of land covered with live-oak, because the wood was regarded as especially adapted to ship building; and large quantities of it were used in the construction of warships before the substitution of iron. Since the Civil War the reservations have been neglected, and occupied by people who cleared the ground for planting. In 1895 all the reservations, except those in Florida, were transferred from the Navy to the Interior department and opened to the public.

The most unusual looking tree to northern eyes is the palmetto (Sabal palmetto) which makes the traveler feel at a

glance that he is approaching the tropics, so associated in our minds are all palms with warm countries. The palmetto grows singly or in groups in the sandy soil of the islands and along the coast of South Carolina to Florida. In some protected places it is found in large groves, but seldom more than thirty to forty feet high. The trunks of young trees are covered with the sheaths of dead leaves which gradually fall off as the tree heightens, leaving a much-scarred surface, to show where the base of the leafstalk clasped the trunk.

The leafstalk is connected with the trunk by a series of threads or fibres. These descend in curves through the whole trunk of the tree, a structure peculiar to palms, interlacing with fibres from the other leaves in such manner as to produce great resisting power. The following story will illustrate this.

Palmetto trees did such good service in an important event in the early history of South Carolina[1] that the memory of it has been perpetuated on the coat of arms and on the seal of the state, which since then has been known as the Palmetto State. In May, 1777, the soldiers under Captain Moultrie were obliged hurriedly to construct a fort to protect themselves from an attack by the British fleet. For this purpose they used the trees that were growing on the shore and the balls of the enemy either passed over or lodged in the spongy wood. Thus the small garrison within were enabled to repulse the foe. To commemorate this event the state seal shows an oak without branches, at the foot of an upright palmetto, signifying the victory of the palm over the oaken British fleet.

Serving a valuable purpose in war it has served many in peace.

This is the tree which is commonly called cabbage palmetto because the growing tips are cut off and eaten as a vegetable by the negroes. They consider them a great delicacy. A far greater destruction in their ranks is caused by using the buds for scrubbing brushes. From three to four feet of the top are taken off, and after removing from the centre the tender young leaves, the remainder is boiled, shredded by machinery, and made into brushes. A factory in Jacksonville has converted as many as 7500 of these buds into scrubbing brushes in a single week. The

[1] History of So. Carolina, Macready. Vol. I. 215.

leaves serve as a thatch covering for roofs, and also find their way into market under the guise of hats, mats, fans, and baskets. The large demands made upon this tree for the service of Palm Sunday is still another cause of its diminution. One firm in Boston supplies all the churches in New England, so they tell me, receiving each year 200,000 leaves.

We had often heard of and had seen pictures of the long-leafed pine, but our first real acquaintance with it was when we stepped from a sleeper one morning and found ourselves surrounded by them, at Pinehurst. This well-known health resort in North Carolina, as its name indicates, is built among pines. These pine trees are of three species, one with short leaves, growing in clusters of two, called the short-leafed pine (*Pinus echinata*), is of wide distribution, found from southern New York to Texas. The other two species, the loblolly and long-leafed, have their leaves in clusters of three. The loblolly or oldfield (*Pinus taeda*) has leaves from six to ten inches long, and is generally seen with innumerable cones, its larger, longer-leafed neighbor, commercially the most valuable of the three, is known as the long-leafed pine (*Pinus palustris*). These last rise tall and straight with no low limbs and the crowded clusters of long dark green leaves form dense tufts at the ends of the branches. There are not many fine specimens in Pinehurst and some of the young trees growing well apart from each other are too slender to stand erect.

The soil of the region is sandy and the level country stretches in every direction for many miles, one road being so like another that with no sign boards, it is easier to lose one's way in these woods than to keep on the right path. The roads are very poor, not much more than cart tracks, and generally without bridges across the streams, so that a horse and carriage has always to ford and pedestrians cross on logs.

These piny woods or pine barrens are from fifty to one hundred and twenty miles wide and extend for a long distance nearly parallel with the coast. The higher portion is covered almost exclusively with the long-leafed pine, but it has been cut from the lowland close to the coast, and is now being replaced by less valuable growth. Originally it skirted the entire coast, with the exception of the southern portion of Florida, from the extreme southeastern

part of Virginia to Louisiana and Texas. Working plans have recently been prepared by the Bureau of Forestry for over a million acres (1,250,000) in Texas. It is also found with a mixed growth of other pines and hard woods on the lower slopes of the Appalachian Mountains at an altitude of two thousand feet. This is, covering as it does thousands and thousands of square miles, a wider distribution than is claimed for any other tree in the southern states.

A fourth species of pine growing from South Carolina southward is the Cuban. This so closely resembles the long-leafed from which formerly it was not distinguished, that it is often cut and sold under that name.

The same confusion exists in the South as here with regard to the use of popular names, and the long-leafed pine has a dozen or more designations; chief of these are southern yellow, North Carolina pitch, Georgia, Georgia long-leafed, Florida yellow, Texas yellow, and long-leafed.

The largest forests used to be in the state of Georgia which has given one of the popular and best known names to the tree, Georgia pine. These once magnificent forests have been practically exhausted by tapping the trees for turpentine, and cutting for the lumber market. That their extermination is but a question of a short time is easy to believe after reading the government report[1] which states that in 1890 one hundred and seventy-five mills in five states[2] (eighty-eight in Georgia alone), were sawing exclusively long-leafed pine timber.

The seedlings of the long-leafed pine look like tufts of grass and, scattered among its coarse growth, one could hardly suspect they were anything else. They grow but little in height for several years, giving most of their nourishment to the development of a strong root system, by which they are better prepared to live in soil where the water supply is scanty.

A plant two years old is not more than one and a half inches high, while the taproot is often two or three feet long. The slow upward growth continues until the plant is about seven years old and as many inches high, when its period of most

[1] Timber Pines of the Southern United States, by Charles Mohr, Ph. D.

[2] North Carolina, South Carolina, Georgia, Alabama, Mississippi.

vigorous growth begins, and it doubles its height in a year. Had I suspected their age I would not have been guilty of cutting some to send home to friends.

When the plants are only several feet high they are very beautiful and look like green plumes. Such great quantities are cut in this condition every winter and sent to our northern markets for decoration, that it should seriously be considered as a menace to the extermination of the young trees. The leaves remain green for a long time and put in flower-pots they look like growing plants. In this fashion they have been used extensively for church decoration. They have been also on sale at the florists in Boston this winter. In Washington last winter at the time of Prince Henry's visit the steps of the German Embassy were decorated with them and they made a beautiful effect. The leaves on this young and vigorous growth are from a foot to a foot and a half long, but on old trees they are shorter, often not more than eight inches long. At the tip of the growing shoot is a beautiful silvery-pointed bud, partially concealed by the length of the leaves.

The largest remaining forest of this species to be seen in the State of North Carolina, so we were told, is within fifteen or twenty miles of Pinehurst. It is known as Ray's Forest and covers an area of only 2300 acres, whereas formerly it was estimated that this tree covered about 15000 square miles of territory in the State.

A walk or drive through these woods presents a very different effect from the dense shade of our northern forests, owing to the absence of the lower branches and the freedom from underbrush. The foliage being clustered at the tops of the trees leaves long vistas of straight columns outlined against the sky. Here and there through the woods we came upon a few deciduous trees, such as buttonwood (*Platanus occidentalis*), red maple (*Acer rubrum*), and the black-jack (*Quercus Marilandica*), and the willow oak (*Q. laurifolia*). There are also occasional patches of low, swampy ground where alder (*Magnolia glauca*), horsebriar, and *Leucothoë* grow. This last, a broad-leafed evergreen shrub has, by the by, been planted at the foot of Hemlock Hill in the Arboretum. In winter those who know where it is

to be found enjoy its sprays of shining green leaves arching over the snow-covered ground.

Unfortunately this Ray's Forest is doomed to an early death, for in three years, if the present plan of getting turpentine and subsequently cutting the wood is carried out, not many trees will be left standing. Exception has been made of a few which are to be reserved as specimens and are spoken of as round timber because they have not been cut or tapped for turpentine. It was a strange and peculiar sight to us to see the trees stripped of their bark for several feet from the ground. This is done in connection with one of the most important industries in the state, known as the Naval Stores Industry, probably because its products have been so extensively used for vessels and in ship yards. It consists in gathering a resinous substance from the trees, and converting it into the resin of commerce and spirits of turpentine. Indirectly tar and pitch are included. Tar is produced from dead wood and thoroughly seasoned stumps. These are gathered, put in a clay-lined pit, set on fire and loosely covered with earth. After nine days of slow burning tar begins to flow into a hole some three feet away with which the crude oven is connected by an underground channel. The flow continues for several weeks. Pitch is obtained as a result of boiling down the tar. We passed the blackened pits where this process goes on.

The resinous substance is not the sap but comes from ducts in the inner wood of pine trees and flows more freely from the long-leafed pine than any other tree in the United States.

Unfortunately we were too early at Ray's Forest to see the flow of turpentine, but the overseer was kind enough to explain to us the process, beside calling a workman to cut a tree and collect the dippings, that we might take some photographs.

The turpentine is obtained by removing the bark on the trunk of a tree and cutting into the wood when a liquid exudes in large quantities. The wood is cut in diagonal grooves from both sides toward a central perpendicular line or track down which the liquid flows into a deep cavity, hollowed out in the trunk, near the base of the tree. This is called a box and the whole process is known as boxing the trees. The boxes are made usually eight to twelve inches from the ground and hold about three pints.

As soon as the liquid ceases to flow freely the upper ends of the Y shaped gash are cut or chipped again, about a quarter of an inch at a time being removed or just enough to expose a fresh surface of the wood. The cutting is done with a peculiar tool called a hacker which has a heavy iron ball about four pounds in weight at the end of a short handle, and is designed to make the work of chipping easier, by giving greater force to the strokes. The boxes are cut in the winter and the flow begins about the first of April. It is most abundant through the summer and ceases in October or November. The chipping must be done nearly every week thus increasing the length of the exposed inner surface from one and a half to two inches a month. At first cut about seven inches in length the wounds gradually extend upwards until, upon trees that have been worked for many seasons, the upper end may be fifteen or twenty feet from the ground.

From one to three boxes are made on each tree. If boxed on one side only they can be worked for ten or fifteen years, for after a rest of several years new boxes are cut, but if at first the bark is cut all around the trunk the trees are killed in three years time. Once every few weeks the resin or dippings is gathered from the boxes with steel spades, put in buckets and transferred into barrels to be taken to the distillery or still, where the resin and turpentine are separated.

The overseer went to the still with us and explained the process. When the turpentine is heated to the boiling point it flows from the vat with a stream of water through a coiled pipe, called the worm, which is surrounded by cold water. The liquid as spirits of turpentine falls thence into a receptacle, the water at the bottom; this is allowed to run off and the spirits transferred to barrels. The thicker portion as resin flows in another direction into a trough from which it is also dipped into barrels. The first year's yield is white and is known as "Virgin Dip" but each succeeding year the liquid grows yellower and darker.

The trade in turpentine and the manufacture of tar and pitch were started in North Carolina by the first settlers and in Colonial times these products furnished the chief exports of the colony. In 1770 their value amounted to $215,000. In 1890 it had

increased to more than eight million dollars ($8,135,339). This country has for many years supplied a large part of the world's demand for these substances, but the industry is doomed to destruction unless a different method is substituted.

In France the work is done more intelligently. Instead of cutting the whole side of a tree they cut a narrow groove and fasten at the base of it a small earthenware pot in which the resin collects. In time this heals over and another groove is made in a different place, while the tree is uninjured. A similar plan of using an earthen pot or cup has been patented by a man living in Louisiana, and it is to be hoped that the method will come into general use in this country. It will both save the trees, and economize the resin, for it is designed to move the pot upward as the scar is lengthened, thus reducing the distance over which the resin flows. The permanent boxes in the trees are gathering places for chips and dirt, a difficulty which the new method avoids.

Since writing the above I have learned that the Bureau of Forestry has been conducting experiments under the direction of Dr. Charles H. Herty which have proved the great superiority of the new over the old system. The trees have yielded twenty-three per cent more turpentine, an increase in one year sufficient to pay for the new equipment and to furnish a profit besides. It is expected that in a short time the new system will be in general use.

A lumber company has established itself in Ray's Forest with the intention of cutting down the trees as soon as the turpentine company has finished with them, having paid for the privilege at the rate of ten dollars an acre. Such land without the trees is of little value, often being sold for fifty cents an acre.

Many lumber dealers believe that the strength of the timber is affected by the drawing off of the resin, bleeding as it is called, but experiments by the Department of Agriculture have proved that bled timber is as strong as unbled if of the same weight. The value of the outside planks is a little less because it is from the sap wood that the resin is drawn off. It cannot be removed from the heart wood.

In all forests of long-leafed pine where turpentine is gathered it

is customary in the spring to clear away from cut trees chips of the bark and other refuse matter in order to lesson the chances of fire. At first it is raked in a circle around the trees and the debris is afterwards gathered into heaps and burned. The fire often spreads to old stumps likely to be covered with resin, perhaps to the young trees, as well as the older ones that have been abandoned in the turpentine orchards. Many of them charred and blackened remain standing until blown over by the wind.

The wood is so resinous that kindlings in building a fire are unnecessary, as we had occasion to know. Apply a match to a log and it will immediately take fire and burn. This quality that is so convenient indoors proves most disastrous in the forests.

Fires due to various causes always have been and still are of frequent occurrence in these pine forests, even owners of the land set fires every year to improve the pasturage for their stock. Burning is supposed to stimulate the growth of weeds and grasses, but of course continual fires gradually consume the fertility of the soil and destroy the seedlings. We saw one or more of these fires every night to which no one seemed to be paying any attention. The people appear to be indifferent to what is considered by them as almost unavoidable. Long stretches of woodland in various places do not appear to have any seedlings, then in other more protected spots there are great growths of them. Other causes of destruction to these pine forests are in the pasturage of cattle who eat off the tops of the young trees; hogs are always allowed to roam at large through the South and do much injury by digging up and eating the tender roots of the young plants; and squirrels pull the cones to pieces to get at the sweet seeds.

It seems marvelous that under these adverse conditions any seedlings escape destruction and more especially when the fields of burned stumps bear such evidence of continued fires.

Another conifer of great interest, not an evergreen, grows along the low coast lands of the Southern States, sometimes following up the rivers for several miles. Unlike the long-leafed pine this conifer, the deciduous or bald cypress (*Taxodium distichum*), needs a great deal of moisture and grows in wet swampy soil that is often flooded for weeks at a time; so that

the young plants are wholly covered with water. It must be a desirable condition, for the old trees grow to a large size. Fortunate it is that some trees prefer the swamps and some the dry sandy plains that both may be clothed with verdure.

Pinus palustris, the long-leafed pine, so it seems to me, is unfortunately named, as we did not see nor hear of its growing in swampy ground although palustris means a swamp.

We went through the Dismal Swamp Canal and to Drummond Lake for the purpose of seeing the bald cypress trees. We were told they could be seen to good advantage in this region, and, furthermore, we knew that some years ago the Geographical Society of Washington had thought it worth while to make this trip.

A canal boat leaves Elizabeth City in North Carolina every other day and starting from that point we found the first ten or fifteen miles of the route was on the Pasquotank River, which grew narrower as we ascended until we were close to the banks on either side. The cypress trees were numerous and conspicuous, just coming into leaf. Some trees were reddish-brown and some yellowish-green in color. In contrast with this delicate green were the brilliant colored keys of the red maples, everywhere abundant through the woods.

We entered the canal which stretched out before us in a nearly straight line for twenty-two miles, connecting with Deep Creek at a point seven miles from Norfolk. In order to deepen the canal recent dredging had drawn away the water in adjacent lands from the roots of the trees and their bare branches testified that hundreds of them had been killed in consequence. The mud had been deposited upon the banks making them very unsightly. In some places however they were covered with plants conspicuous among which was the *Gelsemium*, commonly called jessamine, with its bright yellow flowers trailing over the ground.

From time to time we passed small settlements and there are occasionally large farms, from which vegetables are shipped to our northern markets.

About midway of the canal a small side canal, its banks covered with a growth of horsebrier and wild roses, leads to

Drummond Lake which is off the direct route and has no regular communication with it. So after all we had to make a separate excursion to Drummond Lake, the objective point of our canal trip, taking a launch from Norfolk there and back on another day. Altogether the visit was a disappointment, first, because the wind was blowing like a hurricane when we were there and it was not considered safe to go out upon the lake, which covers an area of about twenty square miles; and second, because there was no chance to see the peculiar cypress characteristics. As far as we could see around the shore most of the trees appeared to be dead due to the lowering of the water.

We saw some of these trees to much better advantage on the James River and also while driving near Suffolk, coming unexpectedly upon them as they stood in the water on the borders of a small stream. The two forms of growth which this tree assumes were quite noticeable, the erect pyramidal or fastigiate form, common to young trees, and the broad summit, often one hundred feet across, and rounded outline of older trees, which generally loose their lower branches, the upper ones curving slightly downward. Where a tree stands alone or a few grow together in cultivation they show the pyramidal form as the one grown in Brookline, or as groups of them do in Central Park, New York.

They have also two forms of leaves, the one pressed close to the branch the other standing at right angles from it. They may appear on the same or on different branches of the same tree, or on separate trees. Trees with both forms of leaves are growing side by side at the Arnold Arboretum. The foliage is very delicate and fern-like and its beauty makes the tree desirable for cultivation.

One of the peculiarities of the bald cypress is the enlarged trunk near the base where it slopes outward, looking like an inverted vase; but the most striking characteristic is a series of projections from the roots, known as cypress knees, an arrangement, so it is thought, for supplying them with air; and as water often covers the ground around the trees to the depth of several feet, the roots, of course, must have air. This is conveyed through the hollow projections which grow on the roots and rise at least

high enough to be above the usual high-water mark. One traveler in Florida relates that he rode among them where they were not less than seven feet high.[1] If, perchance, the water rises so high as to cover these for many weeks at a time, the trees die. When the water recedes and the knees can be seen at a distance, they give the effect of low stumps, often as many as seventy-five or one hundred springing from the roots of a single tree.

This is the generally accepted theory of the purpose of the knees, still they have puzzled and have given a good deal of cause for speculation to botanists.

Michaux writing in 1819 said "no cause can be assigned for their existence," and even as late as 1882, as eminent an authority as Dr. Gray, said that "the use to the tree of the knees is unknown." Some authorities believe that their purpose is to strengthen the root system. From the under side of the horizontal roots large anchor roots are sent off at right angles into the ground, which help to hold the tree firmly in the swampy soil. The knees chiefly occur opposite the anchor roots and no trace of a leaf, bud or sprout has ever been found upon them, except where some seed may have lodged in a decayed portion of the surface and then taken root.

Mr. Lamborn in an article contributed to Garden and Forest in January, 1890, describes some trees that "stood in sand so loose that when the level of the water was lowered the waves readily washed it away and carried it into the depths of the lake." He says, "some four feet of the root system was thus finely exposed. After several days spent in examining a score or more of large trees that had been thus denuded I became convinced that the most important function of the cypress knee is to stiffen and strengthen the root, in order that a great tree may anchor itself safely in a yielding material." When the tree grows in firm ground or where the roots can obtain a hold in the ordinary way knees seldom if ever develop.

The wood of the cypress is very valuable for lumber, being used for a great variety of purposes, and varying in color with

[1] Lamborn, Garden and Forest. III. 21.

different localities. In the last twenty years it has largely taken the place of white pine (*Pinus strobus*) which has become more and more scarce in the market.

The vicinity of the Gulf of Mexico is the region where the largest trees are found, for the cypress ranks second in size of the deciduous trees in the United States and the wood is said to be of the best quality. In such places as this the trees are usually girdled six months or more before cutting in order to stop the flow of sap. This causes the log to be somewhat lighter in weight, otherwise it might sink as it rolls over into the ditch which is dug out for the purpose of getting the logs to the river, where they are rafted together and floated down to the mills. The cutting often has to be done by men in boats.

No other tree grows surrounded by so much water and for centuries they have stood in marshes apparently undisturbed by storm or flood. In wet places especially this tree grows as does the long-leafed pine in areas of pure forests, but as we saw it along the Pasquotank River in drier ground it was growing with red maple and liquidambar. On the Ashley River near Charleston *Tillandsia*, or southern moss, grows upon its branches. This plant loves moisture and in the damp woods of the South often veils these trees, as well as other kinds, with its abundant growth.

Of this remarkable tree Professor Sargent says "it is the glory of the maritime forests of the South and one of the most valuable and interesting trees of the continent; the bald cypress with its tall massive trunk rising high above waters, darkened by the shadows of its great crown, draped in streamers of the gray tillandsia, is an object at once magnificent and mournful."

As we left the lowlands for the mountainous district we found coniferous trees fewer and the deciduous trees more and more apparent. Red birches (*Betula nigra*) grow along the banks of the Swananoa River at Biltmore where they attain great size. The red fluffy character of the bark as seen on young trees at the Arboretum has there entirely disappeared, unless it be from the upper branches, and the trunks look old, subdued, and gray. These trees are estimated to be one hundred and fifty years old or more. Leaning over the water, as is their habit, they give a very picturesque effect to the river. Beneath their shade along

the banks grows a tall reed or cane resembling bamboo. When we saw it the dried leaves of last season were still clinging to the branches.

On the estate known as the Biltmore Forest the trees are small, owing to the fact that before Mr. Vanderbilt bought the land it was owned in small lots by more than three hundred poor farmers who were in the habit of cutting all trees that could be used, and in the ignorant and careless felling injured the young trees. Cattle and fire helped on in the general destruction. So that when the forest was put under scientific management in 1902 it was found to be in a very poor condition. In the ten years that have elapsed since then great progress has been made toward restoring the woods to a production of desirable species.

A short distance from Biltmore we saw the Carolina hemlock (*Tsuga Caroliniana*) and the dark slopes of the high mountains we learned were covered with Fraser's fir (*Abies Fraseri*). Both this hemlock and fir are found only in this vicinity. Indeed we learned from botanists at Biltmore the location of many rare trees and shrubs, growing only locally. These same botanists think the mountains of North and South Carolina the most interesting botanical region on the Atlantic Coast, partly because of the local plants, and partly because of the great variety of species native to the region.

The general appearance of the forests so far as the traveler can see shows many traces of fire and flood. The largest number of fires have been set by farmers, who burn over the ground in autumn in the belief that better pasturage for their cattle is obtained the following spring. Fires thus started often spread beyond control and burn over large woodland areas. Added to this, injudicious cutting has exposed many hill slopes to the weather. Consequently, last year when heavy rains followed an unusual fall of snow, they caused the most disastrous flood ever known in that region. We saw many traces of its destruction, especially on the French Broad River in the western part of North Carolina. In the State of Virginia these conditions are even more noticeable, where many of the hillsides are strewn with burned or partially decayed timber.

It was in the mountains of South Carolina that we saw the

largest and finest trees. Leaving the railroad at Seneca we drove twenty-five miles up a river valley, whither we went for the purpose of seeing that most interesting of all American flowers, *Shortia galacifolia*, little coltsfoot, the natives of Jocasse Valley call it. At first our route lay over a dreary stretch of country where dead pine trees stood in various stages of decay. They had been girdled for the purpose of killing them. This the settlers do to clear the land for planting corn and cotton, in many cases not even removing the stumps. We passed through many such fields until we came to a growth of hard wood, oak predominating, with mistletoe growing upon its branches.

Our guide learning of our interest in trees offered to show us some exceptional ones, as he thought, if we would give another day for such an excursion. It proved to be a day's tramp there and back from the valley, but we felt well repaid for all our trouble in crossing streams and climbing through rhododendron thickets, until we finally came to the big timber. We saw chestnut trees (*Castanea dentata*) fourteen feet in circumference, tulip or yellow poplar (*Liriodendron tulipifera*) more than sixteen and a half feet in circumference, five feet from the ground, a liquidambar or sweet gum (*Liquidambar styraciflua*) nine feet, sending its straight trunk into the air for one hundred and twenty-five to one hundred and thirty feet, with at least seventy-five feet clear of branches. A great variety of trees contributed to the majesty of these hillsides. There were black walnut, black birch, ash, persimmon, hemlock, and pines. There are said to be over one hundred different kinds in these mountains, and it seems probable that the long distance from a market is the reason why so much virgin timber remains untouched.[1]

Best of all, the ground beneath our feet was carpeted with the shining evergreen leaves of *Shortia*. A sight of this beautiful

[1] It was a pleasure seldom experienced to be among trees that were not contributing their foliage for decoration like the palmetto, nor yielding material for commercial purposes like the pine and cypress. It was simply a region of beautiful trees in a quiet and peaceful valley far from the buzz of machinery and the bustle of the world. It was a satisfaction indeed to see trees that were not in any way contributing to the demands of commerce, and I might add one word more and say that it was just this fact that gave them a special interest.

flower in bloom in its native habitat, was the crowning point of our trip, and gave an added zest to the interesting story of its rediscovery in this country, after having been lost to scientists from the time of Michaux' visit to America in 1785, to the latter part of last century, a period of nearly a hundred years. With this picture I will conclude, hoping that I have been able to convey to you some of the interest and enthusiasm I felt myself in these trees, and perhaps to excite a longing to see for yourselves some of the wonders of our southern forests.

[The lecture of Miss Cummings was illustrated by numerous lantern slides, showing pictures of many of the trees and plants mentioned, as well as views of interesting southern scenery. One of the views is herewith reproduced.]

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 21, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. President HADWEN presided and the following lecture was delivered:

THE APPLE AS A MONEY CROP FOR NEW ENGLAND; ITS CULTURE AND PREPARATION FOR MARKET.

BY F. C. RICHARDS, WILLIAMSBURG, MASS.

In order to consider our subject intelligently we need to approach it from three sides.

First, soil and climatic conditions; are they favorable for apple production?

Second, from the commercial side; will it pay?

Third, individual preparation, or am I, as an individual, in any way qualified to engage in orcharding?

As to the first proposition we would say that New England has not yet awakened to the possibilities that lie before her in the way of apple culture. The markets of our own and of foreign

countries are open to us, and well-selected stock of New England packing commands a premium in our large markets above Missouri, Michigan, or New York State packing, or that of any other part of our country. Illinois formerly aspired to be our banner apple state, but her product was deficient in keeping quality and in flavor, and for the past few seasons we have shipped thousands of barrels of apples to Chicago and other western points, and Chicago and other western commission houses are sending their circulars and market quotations all through our New England states.

The same conditions hold good with the Michigan and York State packing, however large and fair the fruit may be and however well-selected, it is taking second rank in the markets because of its poor-keeping quality, and the hard, well-keeping fruit of New England is taking front rank with both dealer and consumer.

I care not to what extent apple orcharding is increased in any part of our country, we in New England can successfully compete with them all, if we but pursue correct methods and if the above statements can be substantiated, as I know they can be, by inquiry of the reliable wholesale dealers in any of our large markets, is it not well for us to take into serious consideration if it would not be profitable and wise for us to engage more extensively in apple culture? We, as individuals, as a community, and as a section of our state, might double and treble our present output, receiving two or three times the amount of money we are now receiving for our product, and with a more extended territory devoted to orcharding, western Massachusetts would soon be recognized in the markets as the great apple-producing belt of the Old Bay State.

Capitalists are quick to see the requirements of the market, and the peculiar adaptation of our soil and climate to the growth of the apple, if those occupying the lands do not, and so it has been proposed to form a corporation of capitalists and practical orchardists, to engage in extensive orcharding on the cheap lands of northern New England. This is just what we do not want, if our farmers will engage in orcharding for themselves. The fruit corporations of California may be, in a way, necessary where they

are at a long distance from markets, but with the necessity there is also a disadvantage to the individual growers, who are largely within the power of the corporations and who can, in a majority of cases, only dispose of their crops through them, and it would eventually work the same way here. If fruit corporations establish themselves in our apple-growing sections, and if they are successful, the outlook of the future for the individual grower is not very encouraging. We are not acquainted with the details of this plan, and it may be better than we think, but however great the advantages may be on one side (and there are, of course, certain advantages in such a corporation), there are also equal disadvantages on the other side, or rather, the advantage enjoyed by the corporation will, by its very nature, work to the disadvantage of the individual grower, and, in the end, be detrimental to his best interest.

We would strongly recommend coöperative packing houses, centrally located in an apple-growing district, where the fruit can be properly and uniformly packed, and put in the best shape for market, and market requirements of the not distant future will probably make some such method necessary. We hope it will, but we strongly disapprove of an orchard corporation controlling a large extent of land in a section, making themselves the trade centre of that section, and practically controlling the crop of an entire district. If the plan can be made to work successfully, there is danger in it for the individual grower, and we do not want it, but what we do want is for the individual farmer, who is alive to his best interests, to plant one hundred, five hundred, or one, two or three thousand trees or more, as his inclination or circumstances will allow, and in a few years our present barren hillsides would be a scene of beauty and fragrance in the springtime, and a blaze of color and source of profit in the autumn. We want something whereby we can see that our work and care is bringing us a gain instead of merely holding our own, something that will build up our homes, and make us prosperous as individuals, as a community, and as a section, and I firmly believe that the intelligent culture and handling of the apple would do this for us. It would be a great factor in solving the problem of the future prosperity of our rock-bound New England hillsides.

It is a duty that we owe to ourselves, and those who succeed us, to develop to its utmost the industry that seems most natural to our soil, and we believe that the next decade will witness a very perceptible increase in our area of orcharding.

But the question with many who are favorably disposed toward orcharding is, How to start and care for one? There is nothing new to be said about this; so much has been said and written from time to time, through books, the agricultural press, and through speakers, that the entire ground has been practically covered. Each step necessary in the planting and care of an orchard could easily require an extended address of itself in order to do it full justice, but there are a few principal points upon which we will just touch and give them a hasty review.

The first question that often presents itself to the would-be orchardist's mind is, Have I a favorable location for an orchard? As already indicated, that need not concern us over much. Here on the hills of New England Dame Nature has already settled that question, and the favorable location is all around us. I know there are theories that certain exposures are the best, and that land should slope toward the east, or the south, but what we are after are apples, regardless of the exposure of the land, and if your soil is such as will produce you fair crops, apples will grow there and you may feel safe in planting an orchard.

In a day's ride you can see orchards exposed to all four points of the compass; wild trees come up by the roadside and in out-of-the-way places, and seem to be indigenous to the soil, so far as any particular lay of the land is concerned.

I would only say in exception to this, that if we wish to get good fruit, the best fruit, to flee to the hills; get up out of the lowlands by the streams, and on to the everlasting hills, where God's glorious sunlight will give the vivid color, and as the mellow autumn days approach, will add the richness of flavor, and where the breezes will play freely among the tree-tops. Oh, give us, by all means, the steep and rugged hillsides for the apple in its perfection.

In preparing the soil for planting it is best, if it can be done, to plow a strip ten feet wide or more, where the rows are to be, pulverizing it thoroughly and making it as mellow as possible.

But if the trees are to be planted when it is not possible to plow, then dig the holes four feet square, and to the depth of two feet, taking out all stones, and working, so that when completed, the soil will stand cone-shaped in the center of the hole.

If the trees are to be planted in the spring, it is better to do this work the previous fall, so that the alternate freezing and thawing during the winter will pulverize the soil more completely. It is of the utmost importance that the soil should be made as mellow as possible, that the roots of the young tree may meet with favorable conditions. Too many neglect these precautions when transplanting and their efforts result in failure. It is not at all surprising that so many trees die after transplanting, when we take into consideration the careless and neglectful manner in which the work is performed. The suitable preparation of the soil is one of the first essentials in starting a young orchard, and should be attended to with great care. Any neglect here will manifest itself very quickly in the growth of the orchard.

Selection of trees:— This is a matter of prime importance and requires care and considerable experience. It is better, if one can do so, to go to a nursery and select for oneself, or, if not enough are required by one person to pay the expense of such a trip, let a neighborhood, or enough persons who are interested join together and send one of their number to make selections. And in making selections do not always choose trees that show the largest size but have more regard to their general thrifty appearance. Those that stand upright and have a stocky, thrifty appearing body and branches are best. One can easily detect such trees in the nursery rows after suitable practice. As indicated above, it is not always the largest trees that are the best. Many times the tree that stands four to five feet high in the nursery row will, after transplanting, overtake and surpass the one that stands from five to seven feet; nor is the cause of this hard to explain. The smaller tree can be taken up with greater care and consequently have more perfect roots than the larger one, and, other conditions being equal, they will become sooner established in a new location, and are much more likely to live. Another important point is, to avoid those trees that have only two or three main branches leaving the body; they are quite liable to split down

when they come into bearing, and the tree be ruined. This is especially true of the Baldwin. Have at least four limbs, and five or six are better, branching from the stem as nearly opposite one another as possible. These branches, as they attain their growth will form a solid knot, that any strain coming on the limbs when heavily loaded, will not be able to split down. There is also a danger, where trees have only two or three main limbs, that water will enter some slight crack during the winter, and, by freezing, will, in a few seasons, split it apart and destroy the tree.

The next consideration, after a suitable selection of trees has been made, is the proper mode of setting them. How many orchards have been practically ruined by setting the trees too near together, and by lack of care in the disposition of roots in the holes and a general lack of care and intelligence as to details during the entire process. Forty feet apart each way is near enough for standard trees. This seems a long distance when the trees are first set, but as they reach maturity, it is none too much to allow free access of air and sunlight to all parts of the tree, which is quite essential in securing the best fruit for market.

When setting the tree, trim off all bruised and mutilated portions of the roots, and also cut back the previous year's growth to correspond with the cutting back of the roots, or, if severe root pruning has been necessary, the shoots may be cut back to one or two strong buds just above the previous year's wood. This is made necessary for the reason that the leaves of a tree are continually drawing from the roots, and throwing off a large amount of moisture, and if we diminish the supply from the roots by pruning, we must also make a corresponding decrease of the leaves to be supplied by them. Be careful to plant the tree no deeper than it was when standing in the nursery row, and be sure to see that the roots lie in a natural position, drawing out the small fibrous roots so they will lay straight. After this is accomplished, begin to fill in finely pulverized soil around the roots, being careful to keep out all stones. After a few inches of soil have been sifted in, pour on some water from a watering-pot, held at a sufficient height, so that the stream will pack the earth solidly around the roots, using a short stick to puncture the soil, so the water can penetrate. If this process is repeated until the

holes are filled up to the "collar" of the tree, they will live, as a rule. In addition to this care should be taken that manure does not come in contact with the roots. It is best to use old, well-pulverized compost well incorporated with the soil.

Selection of Varieties: — This is by no means a matter of secondary importance, but is to be taken into careful consideration in planting an orchard to supply fruit for the market. One of the great difficulties we have in New England orcharding is that we have too many varieties. If a grower has a carload of apples, and a buyer comes to purchase and finds that the crop is made up of four or five different varieties, he cannot afford to pay as good a price for them as he could if the packing was one straight variety, or, at most, had only two or three, because for the different varieties, he must look for nearly as many different classes of trade to which to dispose of them. And so we would advise, after providing the kinds wanted for home use, that only one or two varieties be planted for market. It makes less work in harvesting, less work in grading and packing, is more satisfactory to the buyer, and better prices can be realized. In selecting varieties, it is wisdom and good common sense to study the requirements of the market, and the adaptation of our soil and climate to any particular variety. Do not plant any varieties merely because they are quoted high in the market, for they may not do well in our section. For instance, the Newtown, or Albermarle Pippin is a high-priced apple, and has been quoted as high as $7 and $8 per barrel in the London market, but it is not the apple for us to plant, as the conditions of our soil and climate are not favorable for its full development, while along the Hudson river it grows to great perfection; and there are other kinds that do well in market, but they will not do well on our soil.

What shall we choose, then, for our orchards? I should say that the Baldwin stands preëminently first and foremost as the apple for us to plant. Varieties come and varieties go, but the Baldwin remains steadfast among them all. Any fame that New England fruit has acquired in the markets, has been gained by the Baldwin, and any success we may hope for in the future from our orchards, will probably be gained and maintained by the

carefully picked, well graded, and well packed Baldwin apple. We must build and maintain our reputation on that variety. There may be many of better flavor, and many larger and more showy, but they are not for us to raise. I would include the Greening also, only it does not seem of late years to be in good bearing condition with us. It will bud and blossom profusely in the spring and scarcely a barrel of apples on an entire tree when harvesting comes.

If fall fruit is desired, there is the Congress, Twenty Ounce, Nonesuch, etc., to select from. The Nonesuch is a profitable apple to raise, as it bears so profusely, and is in good demand, though there may be the objection to raising it on a large scale, that being sub-acid, it is suitable only for table use, or baking purposes, and requires a high grade for the best market, while the culls cannot be utilized for evaporating and other purposes, as can the acid varieties.

We will pass hastily over the processes of pruning and fertilizing, as we require the time for other considerations, only saying of the former, to keep the trees as low as is consistent with the ease and convenience of getting around among them. The work of harvesting can be performed with far less expense from a low tree than a high one, as nearly one-third of the fruit can be picked from the ground, or by use of a step-ladder, and the injury to fruit that falls from the tree is not so great. Of the latter we would say, "Feed the tree and the tree will feed you," but do not fertilize too heavily, as a tree cannot assimilate more than the amount that is required to sustain vigor and perfect its fruit. Make a study of the amount and kind of fertilizing material required by the orchard. As a rule, we prefer in actual practice, stable manure as the basis of fertilization, but as the elements entering into the composition of the apple are composed quite largely of potash, we would advise that the stable manure be supplemented by liberal applications of ashes, or other fertilizing material containing a large per cent of potash.

Spraying: — When the necessity for spraying first became apparent, it seemed as though the amount of labor involved, and the necessary expense incurred, would bring orcharding as an industry to an abrupt termination. But as our experiment stations

demonstrated that certain fungicides and insecticides would check the depredations of leaf blight and apple scab on the foliage and fruit, the conveniences for applying the remedies were brought to greater perfection; the orchardists renewed their courage and accepted the situation. It stands as a foregone conclusion today, that the orchardist who hopes to maintain the orchard in a thrifty, growing condition, and to make it a source of profit, must spray the trees, though it is hoped for the future, that a change of climatic conditions and a judicious system of fertilizing, ascertaining the right amount and kind of fertilizer to be used to maintain a tree at its best, will do much in process of time toward eradicating the present diseases to which the apple is subject. A well-fed and otherwise well-cared-for tree will more easily maintain itself against the prevalent diseases, than one that is neglected. It was observed in an orchard of Baldwins during the past season that had been well sprayed and afterward a liberal application of fertilizer made on one portion, that the portion fertilized showed a marked difference from the part that was not. While the spraying, of itself, was of great benefit to the entire orchard, yet the combination of spraying and judicious fertilizing on the part thus treated, was of still greater benefit, and the difference in the appearance of the two parts of the orchard was so decided, that it could be easily detected by even the unpracticed eye of the casual observer. The foliage was of more thrifty and luxuriant growth and retained its hold upon the trees, and its fresh green color, until the harvest was entirely completed in October, while the foliage on the other portion dropped prematurely. The fruit also on the fertilized portion showed larger size and a greater brilliancy of color. The orchard where this was observed has always had the best of care, and in view of these facts, there may be sufficient ground for us to experiment on the proper combination of spraying and fertilizing in order to secure best results.

The cost of spraying for an orchard in full bearing, including labor and cost of material, will not vary much from twenty to twenty-two cents per tree for three applications, which is ordinarily the number of applications necessary during the season. This estimate is based upon obtaining sulphate of copper for six cents per pound, lime for one cent, and Paris green for twenty cents.

As before intimated, the large growers are, as a rule, devoting time and attention to spraying, but it has been more difficult to arouse the small growers to a realization of the fact that the practice is highly beneficial and even necessary. But they are slowly awakening to the situation, and are realizing that present conditions require that their trees be sprayed.

It is a matter of regret that so much ignorance prevails among our farmers regarding the causes that make spraying necessary. The only thing that the majority of them know about it is that a few applications of Paris green will prevent injury to the fruit by insects. But this is not the only reason why we spray, nor is it altogether the most important.

One of the most important of the causes is the fungous disease known as apple scab and blight, which affects the foliage of the tree as well as the fruit, causing the black spots we so often see on our fruit, and covering sometimes nearly half the apple, making it in extreme cases entirely unfit for market in, even, No. 2 grade. Its effect on the foliage is that the roundish black or russet spots gradually extend in size until they sometimes cover the entire leaf, when it can be easily crumbled between the fingers. The foliage will begin dropping from the trees in July and through August, until in some cases the trees are entirely bare of all foliage by the middle or last of September. This disease and the consequent loss of foliage is a serious drawback to the health and vigor of our orchards, and will result disastrously unless the proper remedy is applied. I have conversed with many growers who were not acquainted with the nature of the disease, but whose trees were yearly showing the effects of its action upon them. The preventive to be used is what is known as the dilute Bordeaux mixture, composed of four pounds of sulphate of copper dissolved in a sufficient quantity of hot water to hold it in suspension, and four pounds of unslacked lime, well-strained, adding enough water, when thoroughly dissolved and mixed, to make forty-five gallons in all. It has been found by experiment that insecticides can be used with this formula without the injury to foliage that is sometimes caused by scorching, when used by itself, and after the first spraying, we add one-fourth pound of Paris green to the above mixture.

The Vermorel nozzle is generally conceded to be the best of any with which to apply this mixture, as it makes a very fine misty spray that is quite penetrating, reaching all parts of foliage and fruit, and will not clog up by the particles of lime that are in the mixture.

Harvesting, Grading, and Packing for Market: — These are the last processes to be considered, but are by no means of least importance. All the other processes depend upon these to attain best results and highest success. These processes should have, and must have in the future more of our care and attention, if we hope to retain the favorable disposition of the market now being manifested toward us.

Where the fruit is produced is the best place possible to put it in proper shape for the market, and we need to study the best ways of packing and grading, and reap the rewards and profits by doing this work in the best possible manner ourselves, instead of letting our crops go into the hands of one who stands between us and the wholesale dealer in the market, or else depend upon the dealer in the market to send an experienced packer to see that our fruit is properly graded and packed. This has been a popular way with many, but it is all a mistake. There is no gain in it, but much loss. It has often been said to me by those who had sold their crop, that the buyer would send a man to see to the packing, considering that their responsibility in the transaction, aside from making delivery, was at an end. It is very true that the buyer assumes the responsibility for proper grading and packing, but we pay for it.

The buyer gains well selected goods to place upon the market, and we lose the profit that might be gained by properly grading and packing the apples ourselves. The usual prices paid by dealers to experienced packers is from twelve and one-half to fifteen cents per barrel and with this there are incidental expenses incurred by the dealer in sending out packers, that easily bring the cost up to from twenty to twenty-five cents, depending upon the size of the lots to be packed and their distance apart. All this expense comes directly out of the producer, who thinks he has so happily escaped the responsibility of seeing that his product is in proper shape to place upon the market, for the buyer

will every time pay us enough less for our crop to cover this expense.

The buyers do not want to do this work for us. They would much prefer to pay us a higher price for our product, if they could be assured the work would be done properly, than to do it themselves, but the necessity for some sort of protection has been forced upon them by the carelessness, ignorance, and neglect, that is constantly being shown in our packing.

Our New England packing has been a term of reproach, and a byword in the markets, and will continue to be until we learn to put up an honest barrel of apples; to pack a barrel that will be No. 1, or No. 2, according to grade from top to bottom. It is enough to shake one's faith in the integrity of human nature, to go into the markets and see the apples offered for sale that come largely from the New England states. It is an old and somewhat worn saying about packages that show good fruit at the ends, while the middle is filled with bruised and wormy fruit, but it is none the less true, and until we can correct the tendency to work in fruit that is below grade in the No. 1, and of no grade in the No. 2, we must be reconciled to the just suspicion that now attaches to our packing. We might take the lead in the markets for the general excellence of our product, if we would only use proper care in grading and packing, and we must improve greatly in this respect if we hope for continued success, as we are brought into direct competition with the acknowledged excellence of York State and Michigan grading.

A heavy dealer in one of our largest markets told me recently that the demand for well selected New England packages was practically unlimited in that market and 20,000 barrels would not be a too large quantity for his firm to handle at top prices if properly packed, and this is true in all our markets. We can, by careful grading, command the best prices and best markets.

In order to secure best results in preparing the fruit for market, we must exercise care and forethought at the beginning of harvest. When entering the orchard to begin picking, first gather up all the apples that have fallen from the trees, and keep them by themselves. Never, under any circumstances, allow them to be mixed with the picked fruit. In picking it is best to

first secure what can be reached from the ground where the trees are low, as it will prevent many being knocked off when using the ladders. For convenience of work, the ladder should be provided with an arm or extension that will allow it to reach, by placing the arm in the crotch of a small limb, where it would not otherwise. Avoid all shaking from the tree unless absolutely necessary, and instruct the pickers that they must exercise great care in handling the fruit. Impress this upon them first, last, and all the time. When a tree is being picked, have a man on the ground to gather up all the fruit that falls and keep that by itself. Do not mix it with the picked fruit as it is difficult to get better than second grade from dropped fruit. To secure best keeping conditions, care should be taken not to place heated apples in a barrel immediately after gathering. There are many days during the picking season when the sun shines quite hot upon the fruit, and if placed in the barrel in the heated conditions they are in, they will continue to heat, and decay will result. When the fruit is in this heated condition, it should be placed in the shade on the ground, and left until toward nightfall to cool off, when it can be placed in the barrel with safety.

The outward appearance of the barrels we use to pack in is another item to be taken into consideration, as well as their fitness inside for the use they are designed for. Not enough care generally is exercised in the selection and preparation of packages for packing apples. The first appearance of a package has much to do with its market value, and the buyer takes this into consideration. Do not purchase old-appearing and unclean barrels because they can be bought for a small outlay — you will pay full price and more, too, when offered for sale. Secure good, sound barrels and have them as uniform in appearance as possible. Round hoops are to be preferred to flat, as they are distinctively a New England package. In preparing the barrels for the fruit, first see that all nails on the inside are driven down, so there will be no danger from them of injury to the fruit. In cleaning the barrel first brush out the greater part of flour or other substance that was in the barrel, using a sharp-pointed iron to clean out the chime groove at the bottom of the barrel, which will be the top and "face" end of the package when opened in

market. Rinse out the barrel with water to lay the fine flour dust, after which the barrel is in readiness to receive the fruit.

In grading, a fair apple two and one-fourth inches in diameter constitutes a No. 1 of Baldwin, or other medium-sized variety, though too small for No. 1 of King, or other large-growing variety. Anything smaller than two and one-fourth inches, however fair and perfect, should run into second grade. Use great care in keeping inferior and bruised fruit out of first grade. It is a mistaken idea that the good fruit will help to sell the poor and inferior specimens that may be found in the same package. The poor fruit will injure and detract from the value of the good in every instance.

In grading for No. 2's, care should be taken to keep out such as have no market value. If an apple is quite small in size, but fair, it will pass, but if small and wormy, it should pass into no grade and be rejected. In filling the barrel first place a paper, fitted for the purpose, on the bottom to prevent the fruit on the end from coming in contact with the wood, or any particles of flour that may adhere to it.

In "facing," it is best usually to "double face," as the requirements of the market are demanding that, and it is certain that the packages present a much better appearance when opened. Have one to inspect the fruit as it is run into the barrel, that any inferior fruit that may have accidentally gotten into the sorting baskets may be detected.

Be sure that the fruit is well settled in the barrel by a gentle shake with every half-bushel that is filled in. When this is accomplished and the barrel well-headed and coopered, it is ready for market.

In order to insure good packing that will not show "slack" packages, it is best to let the fruit stand two weeks after picking, and go through the sweat, after which, with proper care in filling and heading, the packages can stand an entire winter in suitable storage without showing any slack, but if packed before sweating, they will almost invariably show slackness in a short time.

We have endeavored thus far to outline and bring in hasty review the natural adaptation of our New England hills for apple culture, and the treatment of trees and fruit that is necessary to

make us successful in it, and unless we are disposed to take the course that will make us successful, it is better for us to not engage in it, as the demands of dealer and consumer are for the best, best in quality and flavor, and best in care of handling and workmanship, for which they are ready and willing to pay us best prices. But if we are disposed to use the necessary care and diligence required to make us successful, there is a prosperous future before us in high-grade apple culture.

But in engaging in orcharding we must recognize the fact that conditions of industry have changed within the past twenty or twenty-five years, and we must fit and prepare ourselves to meet the change. We find this change all about us. It is not confined to any particular industry, but enters into all. If we inquire of the manufacturer or mechanic what these changed conditions require of them if they are to be successful in their business, the answer would be that they are obliged to produce a greater quantity and better quality of work in a given time than formerly; that in order to attain the highest success they are obliged to make use of the best improved machinery and working tools, that they may be enabled to fill orders promptly, and to supply the trade with goods of uniform quality and excellence of material.

If we inquire of the merchant what effect the changed conditions have upon his business, he will tell us that, in order to attain the highest success, he must carry a larger stock of goods, and of greater variety than formerly; that he must make a study of the requirements of his customers, and be prepared to supply their needs before they themselves, perhaps, are aware that such need exists. If we pursue our inquiries and carry them into the lines of professional activity, the professional men will tell us that there has been an advance all along the line; that, owing to the increase of general intelligence, and the advancing lines of professional research, they must study harder and work harder, in order to keep abreast of the times and maintain their positions. They will tell us that the average professional man of forty, thirty, or even twenty-five years ago would be out of date today, and he would be. Look at the immense strides of improvement that have been made within the recollection of men of fifty years of age, and even younger, in manufacturing appliances. Consider

also what scientific investigation and application have done for us, giving us the trolley and cable cars for convenient transit, and the telephone for rapid communication. We will also take for convenience of illustration in professional lines, the practice of surgery at the present day. It almost seems, as we read from time to time, accounts of difficult surgical operations that are performed in our great hospitals, that they could take a man apart and put him together again, and he be the gainer by the operation. The average surgeon and other professional men of fifty years ago, as well as mechanics and those engaged in mercantile pursuits, would be out of place now, and we would have but small use for them. Their acquirements would not be sufficient for our needs; they were sufficient to meet the necessities of their age and generation, and without doubt filled their places in life nobly and well. But conditions have changed, and we of the present day will find in all industries, that the one who does not study the requirements of his particular calling, will be left sadly in the rear.

If we search for the causes that have brought about this change of conditions we will find competition to be the primal cause. Competition has been a mighty power in shaping the industrial conditions of the present day; it has exerted and will continue to exert a wide influence in maintaining those conditions. It is not our purpose to enter into a discussion of the relative rights or wrongs of competition, but merely to recognize the fact of its being an element that enters into our industrial condition. But there are others, also. As an outgrowth of this primal cause, we have two others that must be taken into consideration, as elements in present industrial conditions, namely, — extension and intensive application. Competition demands quantity, it also demands quality; on the one hand a larger output, on the other, a higher grade of product.

These, then, are our present-day industrial conditions, and the question for us is, How are we to meet and apply these conditions to successful New England orcharding? By successful, I do not mean merely successful as an individual (although that, of course, is the basis), but successful in its broad and inclusive sense. We mean the apple-growing towns in the apple-growing districts of all New England; we want to be successful in

orcharding as a recognized section of our country, and not merely as a town, a county, or a state.

But how shall we do it? Well, I will tell you, my friends, just what we lack in order to accomplish it. Success would be ours, only one factor, and that a very important one, is wanting. We have already remarked upon our suitable soil, our favorable location and climate, also the profitable markets that may be ours, but all this is useless to us without the man. What we want in order to reach the highest success is the man, and the body of men up and down these hills of New England to work into orcharding as a business, and when we will engage in it as a business, and conduct it as a business, and not as a pastime, or catch-penny, our success as the largest and best apple-producing belt of our country is assured. When we do this, we will comply with that minor industrial condition, — "extension." What we want in orcharding today, are men who will put into it the extensive effort necessary to broaden it, and the "intensive application" necessary to develop and raise our product up to a higher standard. Extension without intensive development is ruinous and meets the condition of competition on only one side. Too much of that kind of competition prevails with us already. What we want are men who have a comprehensive view of the situation and its requirements, men who have the purpose of success in view, and who are willing to begin in a small way, if necessary, but whose effort will be to extend the industry and perfect themselves in it. But in order to attain complete success in the shortest time it is important to make use of the knowledge of others to supplement individual effort. Individual, unaided effort is a long and hard road to travel, and the orchardist needs to recognize that the conditions of success require that he equip himself with all the practical information possible, and to this end it is quite essential that a more extended use be made of the observations and investigations of educated, professional agriculturists. I hope the day has gone by, never to return, when the rank and file of our farmers will speak in derision of "book" farming. I fear the majority of our New England farmers followed on that line too long for their own interest, and the appearance of our New England hill-town holdings would

indicate that we needed more "book" farming, and not less. This is especially true of orcharding. All the information that can be gathered from horticultural works is required, and all the observation and investigation of skilled specialists added to our own experience will be found necessary to insure success.

Our state experiment stations, with their educated specialists, are invaluable to us, and we need to give their reports more of our attention in these days when the progress of orcharding as an extended industry seems so hedged about with difficulties to the uninformed. Ofttimes the investigations of the station clear the way of obstacles for extended and practical effort with our orchards, which would have been a serious hindrance, if not an actual barrier to us, if left to our own unaided efforts. So, then, what we require is not "book" farming alone, nor do we want to rely upon our experiment stations altogether, but to place a high and appreciative value upon each, and to combine them in such a way with our own knowledge and observation, as practical producers, that best results may be obtained. This, then, is what we mean by "intensive" application: to so apply ourselves to the requirments of our business as orchardists, that we will make use of all means at our disposal to place that business on a paying basis.

We must engage in orcharding for the "money there is in it" as well as for any pleasure that may be derived from it, and in order to do so, we want the men for the occasion, as has been already indicated. But some may say, "My orchard don't pay me." That may be very true. I am quite inclined to think it is true with many of our orchards. But whose fault is it that it does not pay: yours or the orchard's? What have you ever done to make it pay? How much fertilizing have you ever done? When you have taken a crop off, what have you returned to the soil for it? How about the pruning, and general care of the trees? and their fruit itself? — How was it gathered, graded, and packed? Did you have sufficient grace to perform the important process of grading in the best possible manner, so as to secure best market prices when brought into competition with other fruit in the market? It requires considerable of the quality of grace in a man in grading, when an apple will almost, but not quite go in first grade,

to place it in the second, and when it will almost go in the second to place it in non-grade, and reject it. Yet this is just what is required, this, and a thoroughness as to detail in all the processes that go to make up successful orcharding, together with a live interest regarding best methods is intensive application and development in its complete sense. With it the orchardist is fully equipped for his business, but without it, success will be but a dream that will never be realized, and I would ask those who say they cannot make orcharding pay,—"Are you the right man in the right place?" "Have you placed yourself in line with present-day requirements, and given your orchards a fair chance to show whether they will pay or not? and, until you do, is it quite fair to jump to the conclusion that apple growing as a business is a failure?

One great trouble with our orcharding seems to be that we regard it too much as a side issue, and do not place it on the same basis of "you *must* pay or go by the board," that we do other farm crops. Too many are disposed to regard the orchard merely as an adjunct to the farm that will take care of itself. If it yields anything, well and good, but if not, we will look to other crops for our income. Now there is not a farm crop grown, nor any farming industry engaged in, that can be made to pay when conducted on that principal. Too many of the farmers in our New England towns are conducting their operations on that line, they are not living on their farms in the true and broad sense of living; they are simply existing there; they are not developing their farms or themselves. If you will allow this divergence from our subject, I will ask if you do not recollect how much was said a few years since about abandoned farms in New England? What was the cause of the farms being abandoned? Would they not support the occupants, if properly managed? That may have been sufficient reason in some woe-begone location but in the majority of cases, we say, no, that was not the reason, but the trouble was the man weakened. He had not prepared himself to meet changed industrial conditions in any branch of production, and had not fitted himself in any way to keep up with the line of progress, so was forced to surrender. Yet those farms are capable of improvement, and embrace some of the best locations for apple culture that the country affords.

But to return to our subject and summarize our remarks. We have endeavored to show that the apple may be made a staple money crop of New England, for the reason that her soil and climate are adapted to its growth. We have the natural home of the apple with us; we can produce fruit of superior flavor and keeping quality; we have also found that the markets are giving our well-grown, carefully harvested, and well selected and packed winter fruit, the preference over any section of our country, and are glad to pay us a premium for it. Now, does it not seem in view of these facts, that the rough and hilly portions of our New England states could be profitably devoted to apple culture? It certainly has that appearance. All that would seem to be required is, for the owners of the soil to awaken to the magnitude of the natural advantages for orcharding they enjoy, and prepare themselves in the ways that have been indicated, to enjoy the benefits and reap the sure rewards that may be theirs, only bearing in mind that in orcharding, as in all other undertakings, "Eternal vigilance is the condition and price of success." I wish I could send my voice up and down to all the farmers in the hilly portions of the New England states to plant apple orchards. We never need fear any permanent over-production. To be sure, we have occasional years of great plenty, and years of scarcity, with a consequent fluctuation in market values; but notwithstanding that I still say, plant orchards and take care of them, and you will reap an abundant reward. I can think of scarcely a farm product but what is subject to the same fluctuation of values as is the apple, so the argument need not weigh with us, and my closing remark will be, that with the right man in the right place, to engage in orcharding, making use of the right methods, the New England states can be made one of the most beautiful and prosperous, and one of the most desirable sections in which to live, that could be found in the entire country. We would hear no more about our "bleak and barren" hillsides, and we could in a few years' time, command the attention and admiration of the entire country, and of all apple-consuming people, in whatever place, for the quantity and superior quality of the New England product.

Discussion.

President Hadwen. After having listened to such an eminently practical talk on the culture of the apple, opportunity is now offered for a further discussion of the subject.

P. Sayward. I would like to ask if the lecturer would limit the selection of commercial varieties to the Baldwin and Greening?

Mr. Richards. The Baldwin will be the apple for us in New England to raise. The Greening buds and blossoms profusely but does not produce fruit heavily.

The Ben Davis apple while popular in other sections of the country is not to be recommended for New England. The time is not far distant when this much overrated apple will be discarded.

Thomas Harrison. I understand the lecturer to recommend that trees be planted so that the collar of the tree is just at the level of the ground. My experience shows that trees should be pruned in pyramidal form and I have trees that bear twelve to fifteen barrels of apples in a bearing season. The difficulty of planting on a hillside is that at some seasons of the year, by the settling of the earth, the trees become imbedded in water.

Mr. Richards. Provision should be made for drainage. I recommend trimming trees low so that the fruit can be gathered more easily and safely and thus avoid damage from bruising.

Varnum Frost. I would like to ask the lecturer what should be the make-up of the soil in order to obtain good fruit? I know that not all the hills of New England are profitable for tree planting and it requires just as much labor to take care of trees as vegetables. I have had much experience in orcharding and in my opinion it does not pay.

Mr. Richards. It is true there are difficulties in the way and it will take a long time to gain wealth in the business; but after your orchard is established in producing condition, you are going to have a steady income from it for many years.

The soil in the western part of the state is rocky and gravelly and is well adapted for apple growing, but east of Worcester I

would not recommend orcharding. Some of the best orchard grounds in New England are in western Massachusetts. Do not go on to clayey ground for an orchard.

Mr. Harrison. I remember that Mr. Gregory once told me that he had never seen a good Russet apple except in clay soil.

Mr. Richards. The Russet apple does very well in clay soil.

Mr. Frost. According to my observation the best apples grew where there was clay in the soil, so near the surface, that the plow turned it up. They had better color and better keeping quality than those grown elsewhere. Nature shows plainly, by the growth of vegetation, the fertility of the soil, as is evident in the comparison of sandy with clayey ground. You see good buildings where you see good land. A large part of New England is not good for anything.

Joseph H. Woodford. The essayist has given us some good ideas regarding the growing of fruit. The Baldwin is undoubtedly the best apple to grow in this section for commercial purposes. I note that two million barrels of apples were shipped from New England ports the past year and it is an incentive to those growing orchards. Some years ago I was in Bombay when a ship arrived with four hundred barrels of apples. They came in good order and sold readily for twelve and one-half dollars a barrel. After one's taste had become tired of tropical fruits, I thought those Baldwin apples the best fruit I had ever tasted.

I have had some trouble with my apples lately, and they do not appear to be keeping as well as formerly. I put one hundred bushels in the cellar last fall and they are badly affected with a fungus. I have noticed that none of it appeared when the apples were first put in, but developed on the fruit after it had been some time in storage.

Michael Sullivan. I have listened with great interest to the lecture of today and I take the same ground as the lecturer regarding the growing of apples in New England. New England has the climate and all the conditions for success in fruit growing, and the time is already at hand when New England will be for the apple what California is for the orange. In Revere where my farm is located the soil is a clay soil and I took two prizes for Baldwin apples at the last exhibition of the Society.

Benjamin P. Ware. I have listened attentively and with great satisfaction to the lecture of this morning. To illustrate somewhat one point which the lecturer has made, I will say that some years ago I was called upon to lecture in the western part of the state. There was a good deal of discontent at that time with the prospects of the farming interests, and they asked me what could be done to improve the condition of things. I told them that their town was well adapted for apple growing and advised them to go to work and set out orchards. One of these farmers met me not long since and said that his town was indebted to me for the suggestions I had made. They had followed my advice and planted fruit trees and thereby had improved very much the condition of things.

Some, we are told, have cut down their orchards, but those men are not the right men in the right place. Young men can do no better than to set out orchards, for I believe in the future of the apple, especially of New England apples.

The Ben Davis is going out of date and, although it is good to the eye, there are some people who regard flavor as desirable.

E. W. Wood. We are indebted to the speaker for some valuable suggestions for growing orchards. For commercial purposes the Baldwin still holds preëminence in this section and is the best seller in the wholesale market.

We have plenty of cheap land within twenty-five miles of Boston capable of producing good apples, and I can recommend no better business for a young man who seeks to get a living out of the soil. In New England trees twenty-five years old are just in their prime, but in the West, at that age, they have passed their prime.

Mr. Frost. I cannot agree with you.

W. H. Sayward. I am not an agriculturist and know nothing about farming, but I am surprised to hear such differences of opinion on the subject. If this were a convention of doctors or lawyers I would, of course, expect to hear such diverse ideas expressed, but coming from a class of men whom I have been taught to regard as the bulwark of the country, it is indeed surprising. I am also surprised to be informed that the land in the eastern part of the state is not suitable for orchards, but am

glad to hear from Mr. Wood that apples can be grown east of Worcester. New England is, indeed, the favored land for the apple, and no apple can be grown in California to compare with ours.

President Hadwen. I have listened with pleasure to this, the most practical paper I have ever heard on the subject of apple growing. Sixty years ago I planted the seeds from which my orchard is growing, budded the seedlings and cared for them, and it is still a profitable crop. I think the apple is the finest fruit nature has ever given to man. My friend extols the Baldwin, but none have been used in my house for twenty-five years. Why? Because we know of better ones, and in my home we want the best. I say nothing against the Baldwin; it is the apple for the million, and is entitled to respect for it originated in Massachusetts. Some of the best apples known in apple culture originated in New England.

Jacob W. Manning showed photographs of the monument in Wilmington, erected to commemorate the first Baldwin apple tree, and also a picture of Peter M. Gideon who originated the Wealthy apple.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 28, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. President HADWEN presided and the following lecture was delivered:

THE DEMANDS ON AGRICULTURE IN THE PRESENT CENTURY: HOW SHALL WE MEET THEM?

BY HON. J. W. STOCKWELL, BOSTON.

We have glimpses that are revelations, indications that are assurances, giving to us an eminence from which we can scan the future's progress in agriculture, and with somewhat of

certainty prophesy its results. And yet I wonder how this paper would read one-half century from now when the progress shall have so far outrun the anticipation that this view will be looked upon with a pitying smile at the lack of vision, the undervaluing of the great advance now rushing upon us in science, law and adaptability of nature's forces. The agriculture of the twentieth century is a problem beyond the scope of the thought of today, beyond the ken of the keenest imagination. Looking back a half century what wonderful progress. I can look back fifty years and see the old fireplace with its backlog and forestick, the large family that "round the ingle formed a circle wide." The Sunday nights with the apples and cider, the quaint old tunes and the prayer followed by blessed sleep preparing for the week of toil. I remember the wooden moldboard plow that I have chosen to use in the field; the hand rake with the lighter boys in the lead, the elder ones following as the windrow grew. Small pity for the little shaver's heels with the anxious farmer behind and a shower in the west, dark and ominous. It was on just such a day and just these circumstances that a neighbor drove into the field of four acres of grass, laid low by the swing of the scythe, and put in the revolving horserake and saved the hay from the shower that was coming upon us. Who thought of a mowing machine then? Many of you remember its coming, so recent its date. Looking in a late number of one of the magazines you see a picture of twenty-one self-binding reapers doing the work of an army of men on land one-fourth century ago a wilderness, now a part of a three thousand acre farm. A single illustration of the advance that has been made in the last half century, and that must go forward into and through the twentieth century to care for the coming needs, and the natural advance and increase that must be provided for.

There is to be no sudden revolution in means or methods. How quietly has the wonderful advance of the last half century come about! The old methods pushed out, the new coming in with no break, no jar, no strained effort, but as silently, as quietly as the morning light awakes the new day, has its progress been. And yet in review the advance seems a marvel even to us who have lived in it and been a part of it. Just so is to be the future

of this century. But the change must be immense as we project our vision to the close of the century and estimate its necessities.

Let us not underestimate the importance of our calling. The prosperity of the twentieth century must depend on the productive industries; and first in importance are the products of the farm, the products of the soil. For the last decade eighty per cent of all our exports have been agricultural and the exports of the nation represent the wealth of the nation. This ratio of export may not continue. What it shall be rests with the farmer of the twentieth century. We have now a population of seventy-six millions plus. In 1940 we should have one hundred and fifty millions, and, making all allowances, the year 2000 will in all probability see three hundred millions of people to be fed in these United States. If the rest of the world increases in a similar ratio, and the ratio is below anything in the past, it becomes a serious question what shall we eat and drink and wherewithal shall we be clothed. My first proposition is that the soil is sufficient to meet the demand. We are not going to crowd one another off the planet in this century for want of sustenance. But that agriculture may take up the work, keeping step with the necessity, we need to consider some things very carefully. What is the condition of agriculture today? All the world over it is bearing burdens, undue burdens. In our country less than in many others, but these we are not able to bear. I name them and leave them; unequal taxation and therefore unjust taxation; trusts, making extortionate demands of the farmer in goods brought, and placing prices on his products; freights beyond the necessity of remunerative transportation; the price of labor, by these extortions carried above the possibility of profitable return from the farmers' crops; are some of the economic problems that must be met on the very threshold of this century, and the American farmers, realizing these conditions will "dare maintain" their rights. Agriculture is interested in the prosperity of all other industries; much more are all other industries interested in and dependent upon agriculture. The present improved condition and the bright and hopeful outlook at this beginning of the new century is a matter of congratulation in the marts of finance and trade as in the farmers' homes.

Then we need to realize the dignity of our calling; we need to promote these experiments which our state and country are working out, and to realize the necessity of the work they are doing for this country; to encourage each and all who till the soil to do the best work and to find in it the added profit; to inspire in the farmer the desire to excel; to cultivate the love of nature; to realize the grandeur and joy of working together with God, seeking out the subtleties of plant life and multiplying and increasing His gifts for the sustenance of man. In the century on which we have just entered we shall go forward, just as we have done, improvement marking our steps, and the end of the century will find the farmer dignified by his calling and nature's stores not even then half revealed in its ability to feed the world.

The first element to a country's advance is its people. The wealth of a nation is found primarily in its people, not the few, the favored, but the many; they produce it, they multiply it. The wealth of this country has increased fourfold in a quarter of a century. What has produced this wealth? Its natural resources are a factor. Every emigrant coming to these shores is a source of wealth, hands to work and a mouth to be fed, and these mouths give value to the wheat field in the West and the products of the farm in the East. In these homes is the market for the coal from the mine, the products of the soil, and the finished work of the loom. They enhance the value of the railway and the railroad. It is the products of the farm that determine the value of the great railroads that traverse the country to the seaboard, and the stock goes up or down with the prosperity of the farmers of the West, and the reflex prosperity of the productive industries of the East, and it is the great army of workers who are the producers of this wealth, because they are the great bulk of the consumers of the country, and crops without markets may be burned. Good crops, however necessary, if the people who consume them have not the purchasing power, may rot or waste, and the mills stand idle. Therefore whatever affects the laboring classes unfavorably affects the prosperity of the country, and hard conditions in any line are a menace to the welfare of the state.

"Ill fares the land, to hastening ills a prey,
Where wealth accumulates and men decay;
Princes and lords may flourish or may fade,
A breath can make them as a breath has made,
But a bold peasantry, their country's pride,
When once destroyed can never be supplied."

And one step farther. We are proud of our state, its wealth, its resources, its productions. In columns of finance it ranks high, and yet these all must subserve one thing to be truly rich and prosperous, and that is the conditions that produce strong, noble men and noble women, fully equipped to noblest purposes and to grandest aims, and the nearer to nature the child is reared the purer the instincts and the more healthy the development on all lines. The nearer the child to nature the better, the stronger, the man. We too can sing "For the strength of the hills we bless thee our God, our Father's God." There is not a city in these states that is not richly endowed by the strength of country life infusing its every avenue.

God gave us the country and the love of country and the love of nature. The garden is the symbol of all that is best and sweetest from the day of creation to the present moment. The Garden is hallowed by the life of our Lord. Bright and happy, sad and bitter experiences, all found zest, solace and strength there. The hills were His teachers, the wheat was a lesson, the birds were companions and He cared for them. When we take His created things, so dear to the Divine heart, and multiply them as the wheat, beautify them as the lily and the rose, create new varieties, new bounty, new beauty, we are walking so near to God that the very thought of His joy in our work must lift us to higher altitudes and more joyous life. Life is lifted by its surroundings and nature is made so delightful, so beautiful and so improvable, as a ministry, elevating, ennobling, and refining. Therefore must this communion with nature ennoble man, uplift and deify character, so long as the world shall endure.

And second, the element of education or greater knowledge must come to our aid. We talk of nature studies and this is well. Electricity is but a study of nature's forces and we are yet in the primary class in its wonderful uses. Chemistry has done much

for us and yet science's laboratory is so clumsy when compared with the alchemy of nature's crucible. In our chemistry there are mistakes, there are undiscovered potencies, in nature's there has been no change, only greater development and grander results. How wonderful the choice, yes, let us call it the intelligence, hidden in the ground. What teaches the tree to select the soil food that shall produce the leaf, the blossom, and the fruit in their season? Take a bit of earth in your hand, pulverize it, sterilize it if you please, then plant in it three little germs of life, and from that soil will come forth the grain for food, the flower with its fragrance, and the plant with poison in its touch or taste. Who taught these different rootlets to select, collect and diffuse in plant growth such different elements? There is yet much before us to be learned ere we give up nature study or solve the chemistry of plant growth.

"Flower in the crannied wall,
I pluck you out of the crannies; —
Hold you here root and all, in my hand,
Little flower — but if I could understand
What you are, root and all, and all in all,
I should know what God and man is."

Said Dr. Pritchett at the meeting of the Board of Agriculture, at Worcester, in 1901, — "The last quarter century has brought into our possession not only a new series of facts, but what may be called new methods. It is generally called the scientific method. This is nothing other than to get possession of the facts and to apply them in accordance with common sense .... manufactures, mining, all industrial arts, avail themselves freely of the results of modern science. The farmer must do the same thing if he is to keep pace with the developments in manufactures, in mining, and in the other directions. A whole series of facts relating to the soil, the climate, to the life of plants, of insects, to the rotation of crops, are available for his use. The applications of chemistry, of botany, of geology and zoology, bear directly on his work. The twentieth century farmer must use his head as well as his hands if he is to keep step with progress."

The advance of agriculture in the last few years has been grandly suggestive of its future improvement and ability to meet

all demands of the century's growth in population and needs, both domestic and foreign; and yet the storehouse of nature has but half opened its doors to the agriculturist of today. He has simply glimpses of the possibilities of the future, under improved methods and increased knowledge, thanks to the State Board of Agriculture, its societies and its institutes, which to a large degree have led in the advance of agriculture, not only in this state but also in other states in this country. The horticultural societies, their institutes, the meeting together of the advanced agriculturists of a city, county, or state, is of wonderful benefit, inducing friendly rivalry for the best, the newest, the rarest, that nature can produce. The benefit of your meetings and your exhibitions is not a thing that blooms out into fruition in a day; but it is one of the influences that shall enlarge, perfect, beautify and bless the present century. It is well we sometimes take the retrospect glance to give courage to continue the good work, assured that the work is advancing, and that we are in the line of future results, more wonderful than any already achieved.

We are just beginning to appreciate and understand the great agricultural possibilities of America, especially of our country in America. Our inheritance in richness of land is an immense bequest not yet developed, not fully appreciated or recognized. Said Emerson: "Let us realize that this country, the last found, is the great charity of God to the human race." Said President Schurman of Cornell: "This continental heritage of ours is rich in corn and wheat and oats, and cotton and rice and sugar and tobacco, in herds and flocks, and all manner of dairy products, in oil and coal and iron, every precious metal. Our country represents the supreme effort of Providence to build and equip a self-contained home for the human family."

The U. S. Department of Agriculture is doing a great work in a single line for agriculture, in demonstrating the capabilities of this country to supply all its needs, on its own soil, from the fruits of the tropics to the productions of our colder climates. We, the farmers of Massachusetts, are doing a good work in demonstrating the utility of growing the fruits of summer at greater profit in the winter by greenhouse culture, within our own borders, thus giving our people these products, fresh, healthful,

and palatable. This is not an experiment, it is demonstrated fact; and the enlargement in these lines will be wonderful in the early years of the present century. This is not peculiar to our state and nation, but is part of the forward movement in the world's agriculture. Many of our farmers have specialties in summer culture, and the greenhouse culture comes in to give pleasant and profitable employment in the colder season. Not only lettuce, radishes, tomatoes, and cucumbers are now quite extensively grown, but the list is being enlarged yearly, and tobacco shading, and greenhouse culture will soon be a large industry in Massachusetts.

Going along with this enterprise our experiment station has sterilized the soil in experiment plots to destroy injurious bacteria, and this method has been tried by some of the market-gardeners near this city with good results. Once sterilized, with care, the soil is free from injurious germs for a period of years. This discovery has been made very practical by Prof. Stone of the Agricultural College. It revolutionizes greenhouse culture, it takes away the element of uncertainty, and increases the product marvelously, an illustration of which I shall give later.

I make no apology for taking the statistics bearing on this subject from a lecture by Prof. Waugh of our Agricultural College, delivered before the Board of Agriculture at North Adams, and to be found in our forthcoming report.

"Looked at in any light the figures of the last census indicate a specific change in agricultural conditions. The change is in the direction of the investment of more outside capital; and this means, in agriculture as in every other industry, that an economic advance is being made.

Improved and Unimproved Farm Lands.

Another matter which will be interesting to notice in this connection is the disproportionate increase of unimproved farm land. Expressed in percentages of the total area of farm land, the figures for the United States are as follows:

1880,	53.1 per cent improved.
1890,	57.4 per cent improved.
1900,	49.3 per cent improved.

The falling off of 8 per cent in the last decade is especially remarkable. In the State of Massachusetts the figures are still more striking. They follow herewith:

1880,	63.4.
1890,	55.3.
1900,	41.1.

'Only 41.1 per cent of the land in Massachusetts improved today.'

In the case of Massachusetts there has been an absolute, as well as a proportionate decrease, as is shown by the following figures:

1880,	2,128,311 acres improved farm land.
1890,	1,657,024 acres improved farm land.
1900,	1,292,132 acres improved farm land.

Without going any further, it might be assumed that this decreased acreage of cultivated land indicates a more intensive cultivation of the remaining acres. This possibility deepens into certainty when we study the

Value of Farm Products.

The total values of farm products (reckoned for the year preceding the census year) for the United States and Massachusetts, for three particular years are shown herewith;

	United States.	Massachusetts.
1880,	$2,212,540,927	$24,160,881
1890,	2,460,107,454	28,072,500
1900,	4,739,118,752	42,298,274

Even at a glance the increase in the value of farm products is surprising. When examined in comparison with the figures given a moment ago, this increase is truly remarkable. Thus, while the absolute acreage of improved farm land in the United States has increased fifteen per cent during the last decade, the annual value of farm products has increased ninety-two per cent. That

is the record for the United States at large. In the Commonwealth of Massachusetts, with twenty-two per cent *less* land under cultivation, the annual value of farm products has been *increased* fifty-one per cent. That looks like an improvement in agriculture, does it not? I doubt if any other industry in the world can show a similar advance.

These figures show, furthermore, that while there may be some tendency in certain sections of the United States toward the development of agriculture along lines of more extensive farming, the great forward movement of the time is most emphatically in the direction of intensive farming.

The Ratio of Productiveness.

The efficiency of intensive agriculture may be shown on another side by another draft on statistics from the twelfth census. It has been necessary to compute the following figures from data given in the census report, and, since averages are used in the computations, the results may not be accurate to a cent. The general principle is so emphatically brought out, however, that the difference of a few cents here or there is not material. The following table shows the rate of gross income to each acre of farm land, for farms of different sizes. The figures are for the entire United States.

Area of Farms.	Income per acre.
500 to 1,000 acres,	$2 55
260 to 499 acres,	3 56
175 to 259 acres,	4 85
100 to 174 acres,	5 26
50 to 99 acres,	6 71
20 to 49 acres,	9 26
10 to 19 acres,	15 73
3 to 9 acres,	33 83
Under 3 acres,	296 00

The rapid and regular increase in productiveness as the farms grow smaller is too striking to be disregarded or denied. We

should easily be justified in founding upon such data the law of productivity, which might be formulated as follows: the productivity of farm land is inversely proportional to the size of the farm. It may be seen that this law is almost mathematically and exactly correct, according to the foregoing figures."

A few illustrations of new and intensive culture which must mark the century and I close. The first is wheat. Since the beginning of the last century the French peasants have nearly doubled both the area under wheat and the returns from each acre, increasing the product very largely. Forty years ago the crop was good when it yielded twenty-two bushels, today it is thirty-five and the heavier yields reach up to forty and forty-five bushels. There are whole countries, Hesse, for example, where the average crop attains thirty-seven bushels and experimental farms largely increase this amount. Apply this culture and result to our great wheat raising country, with an average yield of twelve and one-half bushels per acre, and increase it to forty and guess the immense product of our country's wheat fields. The present methods and results are the economy of today; to meet the future demand will be the economy of tomorrow. I do not at this writing find the figures, nor can I give you the authority, but am sure of the fact that in Georgia the prize given for the best yield of wheat was awarded to sixteen acres yielding forty-four bushels per acre, or more than seven hundred bushels for the field. Georgia soil is not comparable with the West for wheat raising, and this result is only a hint of the possibilities of wheat raising in this country. The census figures show this lack of intensive culture in every department of general farming; of corn, potatoes, grass, and fruits; but it only needs the spur of remunerative demand, and this country will rush to meet and supply the need. This is general farming and to what it may develop let me give a single illustration.

The Isle of Jersey is the land of open field culture; and the product of the entire island is at the rate of $250 per acre, and this is not in its best sense intensive culture, simply successful farming.

The progress and results obtained in certain countries and islands do not obtain here because conditions do not as yet call for

them. With our vast richness in lands fifteen bushels of wheat per acre have been more profitable than fifty bushels per acre. It is not lack in soil, it is not climatic conditions or changes, that we do not equal the more densely populated countries. We are simply wasteful of our heritage, taking off the cream of richness in the soil, and leaving a heritage of repair for the future to meet. But with the increased demand, rational and specific soil, and selection of seed, the fifteen shall become forty or fifty in the coming years, as naturally and as imperceptibly as the warmth of the sun takes the dew from the grass at our feet.

Now, to turn to the hay crop, one of the money crops of New England; it can easily be raised from less than a ton per acre, as an average, to two and one-half tons with no special culture, just the culture any farmer will give as he finds it profitable for him. On the meadows of Europe, irrigated and enriched, from six to eight tons are obtained in many places, and below Milan, says Kropotkin, 22,000 acres, irrigated with water from the sewers of the city, are yielding from eight to ten tons of hay as a rule.

In oats the average yield is too low for even this country, but better cultivation and new and improved varieties are changing the result to more remunerative returns. Last week's agricultural papers told us of a new variety to produce seventy-five bushels per acre with sturdy stands to carry its product without lodging. This may seem extravagant advertising but it shows the outlook and the expectation. Such instances are sufficient to give us an assurance of future ability in out-door culture to meet the future needs. Even when our present national domain shall be one-half as densely populated as Belgium, and when this country carries a population of one and one-half billions, or more than the present inhabitants of our whole earth, the product of the soil will equal the immense demand.

Next in greenhouse culture. This meets us in the beginning of the century and its success is assured, not only in the immediate vicinity of the cities, but in any remote section of the state, a good selection of products will bring profitable returns, and the results are going to be more and more surprising as we control conditions to insure results.

In the past the soil has been largely brought to and held in

condition by the fertilizing and heat-giving properties of the manures applied. In the future we may believe the soil will be made and the heat provided and maintained by exact and unfailing knowledge. Our own experiment station is showing how to sterilize the soil to insure results, and the astonishing effects of this culture under most favorable conditions, plainly indicating (if these experiments continue to prove as favorable) the immense stride which they insure. In illustration we will glance now to the Isle of Guernsey, the home of greenhouse culture. This island has developed greenhouse culture to a wonderful extent. Ordinary vegetables are grown under glass; the kitchen gardens are glass covered, of which a recent writer says "When I walked through these glass-roofed gardens, which do not know what failure means, I could not but admire the recent conquests of science."

Only one illustration, and this is not new, as I have given it before. The greenhouses of Mr. Bashford, covering thirteen acres, of which Prince Kropotkin says: "When you enter one of these huge glass houses, nine hundred feet long by forty-six feet wide, and your eye scans that world of green embellished by the reddening grapes or tomatoes, you forget the ugliness of the outside view. As to results I cannot better characterize them than by quoting what Mr. Bear, an English writer, who wrote after a visit to this establishment, that the money returns from these thirteen acres "greatly exceed those of an ordinary English farm of thirteen hundred acres, and the product of one year is as follows: 50,000 lbs. grapes cut from May to October; 160,000 lbs. tomatoes; 60,000 lbs. potatoes; 12,000 of shelled peas; 4,000 lbs. beans, all this, besides the subsidiary crops."

This I believe to be largely the culture of the future in Massachusetts. With the best home market in the world within our borders we are to meet all the demands of this market. Greenhouse culture is increasing rapidly and with soil sterilized and fertilizers adapted to plant growth it must increase still further, for in every part of the state it is found more profitable than the old ways and the old farming. Along the northern range of Worcester County cucumbers and tomatoes are added to flowers in greenhouse culture, Leominster leading in this line. From the

Berkshire hills carnations are shipped to the Springfield market, and I have not yet heard of a failure even under present methods; and with sterilized soil, the proper application of heat, and fuller knowledge of fertilizers, I can see no possibility of failure in the future. I look forward to see it said of our state as of the Isle of Guernsey, "Guernsey, like the suburbs of Paris, is a land of market gardening, which has developed into greenhouse culture. All over the island wherever you look you see greenhouses. They rise amid the fields and from behind the trees. They are piled upon one another on the steep slopes of the hills." Only one illustration of production from our College. The past season Professor Stone grew under glass from nine plants of the Rocky Ford variety, three hundred and seventy-six melons, and those of us who were at the June commencement had an opportunity to taste their lusciousness. Compare this with the blighted crops grown in the open air all over the state, and it seems strange that we so slowly adapt ourselves to the better conditions for sure returns.

The progress in agriculture and horticulture is not sufficiently well known and it was with great pleasure that I read the very admirable statement of Dr. Walker of our College before your Society, January 31, on what is being done by the United States government, for this is ably supplemented by our experiment station, and adapted to our conditions. The farmers of the United States, the farmers of our own state, do not realize the great, and in some aspects wonderful work, that is being done for them and through them to the individual, the state, the nation, and the world, by these investigations, experiments, and successes. We used to believe we must work in accord with soil and climate and it was well. It was a part of the success of the past, but today the gardeners make the climate, change the character of the product, acclimatize the plants, change the conditions, raise crop succeeding crop in rapid succession, make the soil they want for each special crop, fertilize and cross fertilize as they desire, sterilize the soil to a wonderful increase of growth and productiveness, produce forage or seed at will, almost, and all this is but the beginning of the new era of this new century. True we may say with Tennyson,

> "Little flower — but if I could understand
> What you are, root and all, and all in all,"

nevertheless we are coming nearer to the heart of nature's forces and the new varieties, the new colors, the improvement year by year in your halls of exhibition, are the proofs of our creative power. The future of this century is assured from the past alone, yet the future shall develop most wonderful advances.

All this proves that our means of obtaining whatever we want upon any soil, under any climate, have been so much improved in these last years of the past century, that we cannot foresee the results that may follow, or the limit of the power of production of the soil. Therefore we see that we need neither war nor pestilence to carry off the surplus population, and starvation will be only the occasional accident of the present century as in the past. The earth is sufficient, the knowledge shall continue to grow with assured results, and the essayist at the beginning of the next century will wonder at our questioning, and confidently predict the future.

Looking forward in the present century we see a wonderful change; let me picture it. We see the fruits of summer grown in January in our own greenhouses, more profitably than in their proper season. We see our own dependent population supplied with every luxury by New England enterprise on New England soil. We see the farmer taking his old stand as a leader in all good enterprises. We see his sons, educated and strong, taking their rightful place and exerting their old-time influence, the strength of the hills, the backbone of the cities. We see the electric car speeding its way from town to town and from village to village, carrying the child to the larger and better schools, and giving free mail delivery to the homes of the country as well as to the city, and carrying the produce from the farm producer to the town or city consumer. We see equal taxation resting "like the atmosphere" on rich and poor alike, every man according to his ability. We see the trusts that hold the farmers in their iron grasp destroyed or made to subserve righteous ends for the benefit of all. We see the bright day when arbitration shall settle the differences of nations and war's costly tribute shall cease. We see the home in which all comforts are found and all graces abound, its approaches, lines of beauty, its crown of blessing the love and contentment that dwell therein. We see wealth of char-

acter and honesty of purpose and life more honored than gold, and honest industry more prized than the indolence of wealth; money valued for the good it can do.

"The man 's the gold for all that."

We see all this, not as a mirage or a far-distant view, but growing nearer and nearer, and never hastening so rapidly to its accomplishment as today.

The development of agriculture in the last decade has been a wonderful illustration of its future possibilities and promise. The natural resources brought to our aid and science that seizes upon and adapts them to our uses. The investigations now bringing their results to us in the great work of the Agricultural Department at Washington, our experiment stations, and the practical results being wrought by and through them, the agricultural knowledge attained at our agricultural colleges and working its results in the actual operations of our progressive farmers. The new departure of proved value in the production of crops, each and all working together have so largely outrun the increase in population that we look upon the present century with its threefold increase, not only sure that the agriculture of this country will meet all its demands, but that it will at its close stand as today, the granary of the world.

Discussion.

President Hadwen. After having listened to this most interesting and eloquent address, I now declare the meeting open for the discussion of the subject, and will call upon Mr. Ware to break the ice.

Benjamin P. Ware. I have listened very attentively and very profitably to the essay. I have often thought how it is going to be possible in the future to feed the rapidly increasing population of this great country of ours. This question has come up from time to time and we have had today an answer to it.

In riding on any of the railroads across this state, you will be surprised to see what a small proportion of the land is really under cultivation, and with the increase of production by the methods

stated in the lecture, I think we need have no fear as to how the people in the future are to be fed.

I have heard it seriously discussed that chemical science is going to feed the public in the future; that our food will be made up into little tablets that we can carry around in our vest pockets. I am thankful for the assurance, that the lecturer gives us today, that we will not have to be fed on chemicals in the future, and that we will not in our day, nor will our descendants be obliged to give up the pleasure of catering to healthy appetites. It has been shown by the lecturer that we need not worry about the future, in this respect at least.

Thomas Harrison. I would like to ask what are the methods of the State Board of Agriculture in encouraging the production of crops. Why would it not be a good plan to exempt from taxation for a term of years land that is being improved by cultivation? The farmer spends many years in growing an orchard, for instance, and is taxed at an increasing rate every year, often paying more in taxes than the income he receives from his land. It would be a real help to the farmer if, during the period of improvement of his land, a certain number of acres were made free from taxation.

Mr. Stockwell. Massachusetts is continually doing something for the farmer, not by giving him money, but by aiding him to improve his farm. The farmers of this country are far differently situated from those of the old world. Here the small farmer owns his land; there he only rents it. Here the farmer gets a little ahead each year and, as a class, is getting a little richer all the time.

Every boy that goes from the Agricultural College at Amherst is doing something for the farmer, and every year shows progress in more intensive cultivation.

Varnum Frost. I am glad to hear one man speak a good word for the agriculturist, for it is a trade side-tracked the world over. Farming today is the closest in my remembrance. It was easier forty years ago to get ten dollars for produce than it is now to get two dollars; then the crops did better and were of better quality; and as for science, Where is the science that comes in in farming? A man who has common sense, who likes work better than any

play, is qualified for the business and will make farming pay. I presume the majority of this audience takes it all in. Sterilization of the soil originated at Amherst. We have about as good farmers out in Arlington as there are anywhere, but they now condemn sterilization and are having trouble with it. It is a failure after the first crop, for mildew sets in and does great damage. Greenhouses freeze up and those who have had experience are not so enthusiastic about farming.

Mr. Stockwell. I am very glad that this side of the subject has come up. It is true that farming is not as profitable as we would like to have it, but as a rule greenhouse culture is today profitable, and is destined to become more so, especially as it has been shown what a yard of earth can do. I do believe that the science and knowledge that are being placed at the service of the farmer by the United States Department of Agriculture and the State of Massachusetts are a great help and that the outlook for agriculture was never brighter than it is today.

Mr. Frost. The great trouble with the farmer of today is the extravagance of the age. Seventy-five per cent of the people live beyond their means. Through the extravagant ideas of the times the taxes are being steadily increased, and the rate in some of our suburban towns, which used to be eight dollars on a thousand, is now twenty dollars. The farmer should get a larger proportion of what his goods are really sold for; he disposes of his produce to the middleman, and the middleman gets more for handling it than the farmer does for raising it.

Mr. Harrison. I want to suggest how the farmer can be benefited by the State Board of Agriculture. I think that anyone starting an orchard should be exempt from taxation for five years.

Mr. Ware. I do not think it is desirable to release an orchard from taxation. Many attempts have been made to exempt farm lands from taxes, but that would be class legislation.

If you are going to exempt any landed property it would seem as if it ought to be woodland, where it takes from twenty to thirty years to get a crop.

I do not think it necessary to subsidize orcharding; it is too much like a ship subsidy; and farmers do not approve of that. Farmers are able to handle their own business and are, on the

whole, as prosperous as any class of citizens. Speaking about the work of the United States Department of Agriculture and its value to the farmer, I want to mention one fact that has come under my observation.

The seeds sent out by the Department of Agriculture are not, as is well known, used generally by the farmers, but I know of one case in which they have produced a good thing. The old Mason cabbage, now called the Warren Stone Mason, which has been extensively grown for the last forty years, came from a package of those government seeds.

It is decidedly the best cabbage grown and has been worth hundreds of thousands of dollars to the farmers of Massachusetts.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 14, 1903.

A meeting for Lecture and Discussion was held today at eleven o'clock. President HADWEN presided and the following lecture was delivered under the John Lewis Russell Bequest:

THE DISEASES OF THE POTATO IN RELATION TO ITS DEVELOPMENT.

BY PROF. L. R. JONES, UNIVERSITY OF VERMONT.

The potato has long been one of the most commonly cultivated plants of our fields and gardens. Yet it is the most variable in yield of our standard crops and the most liable to diseases and failure from causes the least understood. Why is this? A partial explanation may be found in the fact that it is a semi-tropical plant which has been brought under cultivation in the northern climate by rapid and intensive breeding. Our season of growth is shorter by one-third or even one-half than that of its natural habitat. There it reproduces itself primarily by seeds and secondarily by tubers. Here, by breeding and selection, man has

so changed the conditions that seed production is almost unknown, while the size and number of the tubers are enormously increased.

For information upon these points I am largely indebted to Mr. Cyrus G. Pringle, the botanical explorer, who is thoroughly acquainted with the potato, both wild and cultivated, as it occurs in Mexico. In the gardens there, it is planted in March and harvested in December. The period of blossoming and maturing seed is in August and September, whereas the tubers are formed one or two months later.

Reproduction by seeds is a sexual process, that by tubers is vegetative. Both are exhaustive of vital forces. The two are, therefore, in a physiological sense opposed, and cannot well be carried on at the same time. Under the natural condition of the wild plant the seed precedes, with our shorter season and intensive culture we have crowded the two processes together until they tend to overlap. That is, we have forced the tuber production back into the period which in the wild plant is given to the production of flowers and seeds. As a result we have, just after the potato plant comes into blossom, a strained and unnatural condition; a state of physiological tension, of stress between two opposing vital tendencies. According to the mode of its ancestors the major part of the plant's energy would then be tending upward toward flower and seed; but tuber production in the high-bred specialized plant begins immediately and the acquired tendency is for this process to claim the major part of the food.

As a result of this conflict of tendencies in the plant there occurs a *critical period* during which the continued health of the plant, if not its very life, hangs in the balance.

Whether this explanation is correct or not, the fact is certain that the fortnight including and immediately following the blossoming period is the turning point, the crisis in the life of the potato plant.

The production of a profitable crop depends more upon its protection at this period than at any other during its growth. Before this time it will quickly recover from very severe ravages of insects; a little later it will do the same; but serious injury to the foliage or arrest of development by unfavorable soil conditions at this period will start the plant upon a decline which is

disastrous to the crop of tubers and leads to the premature death of the tops; and, in my experience, no subsequent treatment makes amends for neglect at this time. If, however, the plant is carried in full vigor through this critical period it starts upon what is virtually a new lease of life, a vegetative period which, with the more vigorous varieties in our northern climate seems to have no natural terminus. The length of this subsequent period of vegetative development seems dependent not on internal factors primarily, but on external conditions, chiefly climatic, which have so varied at Burlington during recent years as to bring successive crops of the same variety and on the same soil to so-called maturity at dates varying from September 25 to November 10. It is during this second or vegetative period that all of the marketable crop is developed. It is for this that we have grown the plants, and it is important, therefore, to inquire more exactly when and at what rate this development occurs. In order so to trace the relative rate of growth of the crop through the months of August and September partial diggings have been made with ten day intervals during three seasons at the Vermont Experiment Station. These have revealed the surprising fact that with vigorous varieties, properly cared for, one-half of the marketable crop of tubers develops after the 22d of August. The following results of one such season's growth is typical of them all:

The Development of the Potato Tuber.

WHITE STAR POTATOES, PLANTED MAY 20th, AT BURLINGTON, VT.,
YIELDS AND SIZE OF TUBERS AT DIFFERENT DATES.

Date of digging.	Total yield per acre.	Yield of marketable size.	Average size of tubers.
Aug. 2	58 bu.	30 bu.	1.6 ounces.
" 12	115 "	75 "	2 "
" 22	230 "	163 "	3.7 "
Sept. 1	304 "	234 "	4.4 "
" 12	356 "	303 "	5.2 "
" 22	379 "	353 "	5.7 "

It is noteworthy as indicating how little the fundamental importance of the continuous health of the plant during this vege-

tative period is appreciated, that the date of its beginning is almost coincident with that when the average potato grower abandons his plants to weeds, insects, and blights. The thrifty New England farmer is ashamed to have his neighbors see weeds or bugs in his field before this period, but on the other hand he feels called upon to defend, if not to apologize for his course, if later than this he pulls weeds, or sprays to protect his plants. Yet the beginning of this vegetative period is the very time when certain insects, notably flea-beetles and grasshoppers, do their worst work; and it is often serious work, indeed. If a period of dry weather follows, and, if the soil is either caked or weedy, tip-burn is the inevitable result; and when this begins it is as a rule prophetic of the steady decline of the plant to its death. Tip-burn is a physiological disease due to inadequate water supply. The potato requires more water than do most plants; indeed, the production of a full crop demands that fully one-fourth of all the water that falls on the soil during the entire season shall be absorbed by the plant, and either retained or passed off through its leaves. Moreover, the time of most active demand for this water is at and shortly following the critical period. The securing of this water supply is dependent upon three things. First, the water-containing character of the soil, determined by humus-content and through pulverization. Second, surface tillage to conserve this. Third, healthy foliage to carry on transpiration which is the pumping process in plants. Much of the so-called "blight" of potato foliage is really tip-burn, due to insufficient attention to one or all of these things.

Starch manufacture is scarcely second to water supply in importance for tuber formation; this occurs entirely in the green leaves under the invigorating influence of sunlight. The extent of healthy surface is, therefore, an exact index to the capacity for starch formation. When it is remembered that one-half of the possible crop may be formed after the third week in August, the importance of the preservation of the healthy foliage through the early autumn becomes apparent. Certainly the average potato grower has no just conception of his dependence upon this late foliage for a full crop. As evidence of this we are frequently asked by intelligent farmers whether there is not danger of their

plants "running to tops" as a result of the spraying, and whether, in that case, they should not prune them back or break them down. In one case last summer, a man who had sprayed and thus secured a fine stand of healthy plants was advised by his neighbors that he was ruining his crop and must cut the stems back. About the middle of August he wished us to visit his field and advise him in the matter. We did so and offered, on behalf of our Experiment Station, to pay him for possible loss if he would cut back the tops by one-half in alternate rows in his field and report the outcome to the Station. The result was a yield of one hundred and fifty-two pounds where pruned as compared with two hundred and twenty-one pounds where unmolested. In one form or another this misunderstanding of the necessity of healthy foliage for full tuber production is so common that we have been led to seek for its explanation. Apparently it is chiefly founded on two misconceptions. The first is based on the fact that certain conditions, such as moist cloudy weather, which lead to the growth of rank foliage, do not give correspondingly large yields; but a moment's thought shows that the difficulty here is not that there is too much foliage, but that there is too little sunlight. The second and more general misconception is the confusion of the principles governing seed reproduction, as it occurs in apples and tomatoes, with those governing vegetative reproduction, as it occurs in the potato. It is a common practice to stimulate the former by pruning and the inference is wrongly made that the same process may give like results with the latter.

But the greatest enemies of the New England potato crop in this latter stage of its development are the diseases due to fungi or bacteria — the blights and the rots.

Twelve years ago when one spoke of potato blights only one thing was suggested — the dreaded mildew; that fungus which swept the fields of Ireland in 1845 and left the land famine-stricken. Perhaps, indeed, we may date the earnest study of plant diseases from that year. Berkeley and De Bary in Europe, and later Farlow in this country, together with other mycologists gave careful study to this disease and proved beyond question that it was caused by a fungus [1] which invades the leaves and passes from

[1] Phytophthora infestans.

them to the tubers causing the dry rot. This malady is more or less familiar to all potato growers, but as a rule they dread it most because of the rot. As a matter of fact this direct loss from rot is relatively of less account under our New England condition than is the indirect loss from the blight. We appreciate the former more keenly because it occurs after the crop is grown, perhaps after it is harvested. It is visible, tangible, and loudly mourned when it occurs, but the premature death of the foliage which means the loss of possible growth of what might be, is actually of far greater consequence. For example: in 1893 the blight appeared upon our field at Burlington, August 10 and by August 20 practically every unsprayed plant in the field was dead. Upon digging in September the yield of sound tubers was found to be one hundred bushels per acre, with some twenty-five bushels showing the rot. This seemed a serious loss but compare with it the conditions where the plants were sprayed, when the yield was three hundred and twenty-four bushels of sound tubers per acre, and only three bushels of rotten ones. The total gain from checking the disease was two hundred and twenty-four bushels per acre, but of this only twenty-one bushels, or less than ten per cent was due to the checking of the rot, the balance, two hundred and one bushels, was due to the prolongation of the life of the leaves. And if we compare the date just given for the death of the plants with those previously listed for the development of the tubers, it is at once evident how this is explained. Indeed, so used have the potato growers become to these ravages of insect and blight on the potato foliage in August and September, that a majority seem to consider them inevitable, if, indeed, they do not think them the natural accompaniment of the ripening process of the plant. As a matter of observation in Vermont I believe I would be overstating the facts if I said that twenty-five per cent of the potato plants reach even approximate maturity; in other words over seventy-five per cent of them die prematurely.

Thus far we have traced the relation of but one fungus to this destruction of the potato foliage. Soon after the development of the present system of Agricultural Experiment Stations, critical attention was directed anew to the causes of the potato blights of Vermont and other sections, and it was found that there was

much trouble from some obscure diseases other than those caused by this familiar mildew. In certain seasons a leaf-spot fungus[1] causes more loss in many parts of New England than does the mildew, and further south and west the proportional destructiveness of this more recently recognized fungus is even greater. It is no "new" fungus; indeed, I find it on the specimens of the wild potato which Mr. Pringle brings from Mexico. It was overlooked until about ten years ago, simply because it was so intimately associated with the mildew in its development and so similar in appearance. From the economic standpoint, however, it differs from the mildew in a noteworthy respect, in that it never leads to the rot. To distinguish these two diseases the popular names in use in this country are "early blight" for this latter as contrasted with the "late blight" and "rot" of the former.

More recently Dr. Erwin F. Smith of the National Department of Agriculture has shown that the most serious malady of potatoes in the South known as the brown rot is due to neither of these fungi but to a bacterium.[2] This attacks both tops and tubers and is very destructive. I have learned of its occurrence in the Hudson valley as far north as Newburgh and without doubt, it has invaded southern New England, although I have not as yet observed it in Vermont. A stem blight, apparently due to bacteria, was reported to us from two sections of Vermont last year and may be more common than is yet known. A similar disease due to bacteria has been reported this last year as destructive in France and other European countries.

Again I would remind you that all of these diseases, unless possibly it is the brown rot, are to be feared chiefly because they destroy the tops prematurely and so shorten the later growing period of the tubers.

In closing this part of the discussion, What can be said as to remedies? In the first place let us emphasize the importance of more attention to the soil conditions — humus, tilth, and to cultivation, with the view of increasing and conserving the water supply. These make the large crop possible. Having done this

[1] Alternaria solani.

[2] Bacillus solanacearum.

one cannot afford not to spray. As a result of comparative trials of a wide variety of fungicides extending over thirteen years, at the Vermont Experiment Station, we have found Bordeaux-arsenic-mixture to be an almost perfect preventive of all the diseases and insects attacking the foliage of the potato plants. It is apparently almost worthy the title of a "cure-all." During this time we have not failed once in carrying the foliage upon vigorous late potatoes to practically full maturity by making from one to three applications of this mixture following the blossoming period. The various dates of spraying and the gains therefrom are briefly shown in the following tabular summary.

GAINS FROM USE OF BORDEAUX MIXTURE ON LATE POTATOES.

Variety	Planted	Sprayed	Yield per acre		Gain per acre
			Where sprayed	Where not sprayed	
White Star ..	May 11, 1891. .	Aug. 26, Sept. 8.	313 bu.	248 bu.	65 bu.
" " ..	May 20, 1892. .	July 30, Aug. 13, 25.	291 bu.	99 bu.	192 bu.
" " ..	May 20, 1893. .	Aug. 1, 16, 29.	338 bu.	114 bu.	224 bu.
" " ..	Apr. 26, 1894. .	June 16, July 17, Aug. 30	328 bu.	251 bu.	72 bu.
" " ..	May 20, 1895. .	July 25, Aug. 13, 31.	389 bu.	219 bu.	170 bu.
Polaris	May 15, 1896. .	Aug. 7, 21.	325 bu.	257 bu.	68 bu.
"	June 1, 1897. .	July 27, Aug. 17, 28.	151 bu.	80 bu.	71 bu.
White Star ..	May 10, 1898. .	July 21, Aug. 10.	238 bu.	112 bu.	126 bu.
Average 3 yrs	May 18, 1899. .	July 26, Aug. 17, Sept. 8	229 bu.	161 bu.	68 bu.
Delaware	May 23, 1900. .	Aug. 4, 23.	285 bu.	225 bu.	60 bu.
"	May 25, 1901. .	July 20, Aug. 21.	170 bu.	54 bu.	68 bu.
"	May 15, 1902. .	Aug. 1, 20.	298 bu.	164 bu.	134 bu.
Averages for twelve years.			280 bu.	165 bu.	115 bu.

In comparison with this mixture we have tested every other fungicide of any promise which has come to our attention, and find nothing equal to it in the fresh home-made form, although some of the ready-made Bordeaux mixtures on the market are excellent. Let me add my testimony to that of previous lecturers that Bordeaux mixture varies widely in character depending upon the way it is made.

Two practical questions are frequently asked, which have not as yet been touched upon. First, the relation of date of digging to the development of rot, *i. e.*, whether, in case the blight has killed the tops it is better to dig the crop at once, or to let it lie for

sometime in the soil. There will be serious loss from rotting in the soil in the latter case and from rotting in the cellar in the former. Which is the lesser of the two evils? Last season the blight began to develop early and an unusually good opportunity was offered for testing the matter. Experimental diggings were made by the Vermont Station at four dates ranging from August 25 to September 30, and in six fields including various conditions of soil and disease none of them having been sprayed. The results are summarized in the following table.

Dates of digging	Aug. 25	Sept. 6	Sept. 18	Sept. 25
Average total wt. per row at each date	28.6 lbs.	26.2 lbs.	25.9 lbs.	24.9 lbs.
" weight which were sound on Sept. 30	18.7 "	20.9 "	23.5 "	23.0 "
" decay on and before Sept. 30 in pounds	10. "	5.3 "	2.4 "	1.9 "
in percent	35 %	20 %	9 %	8 %

Without going into the details, we would say that as nearly as we can formulate conclusions based upon this trial of a single year, it is that where the tops have blighted and there is danger of rot quite as much of it will occur in the cellar as in the field and, therefore, it is better to delay the digging until some ten days or more after the last tops are dead; and a longer delay will do no harm.

The other question is, as to whether there is hope that science will suggest some way to rid us of the disease other than by the troublesome method of spraying. It has not done so up to present time, therefore it behooves us to spray; but will it in the future? So far as known the late-blight fungus lives over winter only in the tubers and is perpetuated from year to year in such infected tubers used as seed. If so, cannot they be disinfected? Unfortunately, this fungus is not, like the potato scab germs, lodged on the surface; it is internal and, therefore, chemical disinfectants offer no promise. The only hopeful suggestion has come from a European botanist, (Jensen), and is based on the known sensitiveness of the fungus to heat. It is that by heating such infected tubers for about six hours at a temperature of 104°

to 108° F. in a dry oven, the fungus may be killed without injury to the tubers. This matter has been tested at the Vermont Station and the tubers grew all right. It has not been fully demonstrated, however, that this treatment destroys the fungus, and even if it does it is not practical for the ordinary potato grower.

Unquestionably, however, more attention should be given to the selection of uninfected seed. The thought is worth suggesting, at least, that if every potato grower in this country were to plant sound seed potatoes for one season the fungus might go out of existence, so far as we are concerned, until again imported. There is another hope, however. The variability shown by man and the domestic animals in individual power of disease-resistance has led plant breeders in recent years to give increasing attention to the possibility of such individuality of resistance in plants. It has long been known to horticulturists that this occurs with some varieties, at least, toward certain diseases.

For example: a few varieties of apples are perfectly resistant to the rust, and some to a lesser degree resistant to scab. Recent investigations by botanists of the National Department of Agriculture have led to the discovery of remarkable disease-resistance in individual cotton plants and more recently in cow peas and, moreover, this is perpetuated in the offspring, so that seed of these "iron clad" races are now being distributed by the government to the southern farmers. Plant pathologists and plant breeders should be stimulated by these results to renewed courage in their search for resistant varieties and individuals in other kinds of pest-ridden cultivated plants. A blight-proof potato may not be an impossibility.

A series of lantern slides were shown illustrating the development of the potato, the nature of its diseases, the relative values of various fungicides as used in potato fields and orchards, and methods of spraying. In connection with these the following practical points were brought out:

The bordeaux-arsenite mixture excels in that it is a complete

fungicide and insecticide and very adhesive. In its preparation one should first dilute the copper-sulphate solution and the lime water, then either pour the former into the latter, or pour both into a common receptacle and mix quickly and thoroughly. Unless made in this way the mixture is liable to clog pump or nozzle and is less adhesive.

When Paris green is applied in water, apart from the Bordeaux mixture, an equal weight of lime should be mixed with it to prevent danger of burning the foliage.

For most farms the barrel pump operated by hand power is most economical and satisfactory. When used in the potato field this is best carried on a one-horse cart, with two wheels, set about six feet apart so as to straddle two rows while the horse walks between. Excellent power pumps are now on the market for larger operators.

Slides were shown illustrating the fact that proper spraying prevents the scabbing of pears and apples.

The results of four applications of Bordeaux-Paris-green mixture as compared with Paris green alone, in one orchard, were as follows, the value of the crop being practically doubled:

	1st class.	*2d class.*	*3d class.*
Flemish Beauty Pear, sprayed,	94 per cent.	6 per cent.	0 per cent.
" " " not sprayed,	55 "	43 "	2 "
Winter Strawberry Apple, sprayed,	65 "	24 "	11 "
" " " not sprayed,	31 "	45 "	24 "

In another orchard of Fameuse or Snow apples upon which the scab is very destructive the gains were even more noteworthy:

	"Select"	*1st class.*	*2d class.*	*3d class.*
Sprayed:	40 per cent.	20 per cent	30 per cent.	10 per cent.
Not sprayed:	none	5 apples!	4 "	96 "

The apples from each tree were placed on the market. Those from the sprayed tree brought $15.44, from the unsprayed tree $2.15.

Discussion.

Benjamin P. Ware said he wished to make one or two inquiries of the lecturer. He had had some difficulty in properly preparing the Bordeaux mixture so that it would not clog the nozzle of the sprayer, and it had been recommended to him to use the lime water after allowing the lime to settle. He had used the usual formula of ten pounds of lime to fifty gallons of water. He asked if this would have the full power and strength necessary to the mixture. He also asked when potatoes should be sprayed and how many times during the season.

The lecturer replied that he could not believe that the lime water could be used with success in the preparation of the Bordeaux mixture. As to the spraying of potatoes he did not find it profitable to spray more than two or three times; twice on an average, and usually in August; the first application to be made during the first week and the second in the third week of the month.

These statements, however, are based upon Vermont conditions; further south there are certain of these maladies that appear earlier in the season.

The potato blight commences when the plant is in its most vigorous growth and the damp, humid weather of August gives the fungus its opportunity for development. The rule in spraying is always to get a little ahead of the earliest possible appearance of the blight.

The destructive development of the fungus is dependent upon the coincidence of certain weather conditions and a certain stage of growth of the plant. The blight rarely or never shows until the potato passes the blossoming stage, and the extent of the development then depends upon the humidity of the atmosphere.

Aaron Low inquired whether, if it should rain soon after spraying, it would be necessary to repeat at once.

Professor Jones replied that the peculiar value of the Bordeaux mixture is its capacity to hold. It would set in three hours, so that a rain coming on after that time would not render a repetition of the spraying necessary. He had found that with some of the less adhesive fungicides, the addition of a little glue or molasses was beneficial.

Thomas Harrison asked what was the value of the lime in the Bordeaux mixture, and if any substitute for it could be used.

Professor Jones stated that the lime was necessary to neutralize the acid of the mixture, and that no satisfactory substitute had been found. Sal soda had been tried, but nothing superior to lime was known. The soda does not have the adhesive quality of the lime.

Mr. Low called attention to the fact that the potato plant does not now produce the quantity of seed balls that it used to thirty or more years ago, and asked the reason for this change in the habit of the plant.

Professor Jones, in reply, stated that he did not believe it to be a sign of weakness, neither did he believe it a result of Paris green poisoning, as some have thought, but that it represents a change in the life history of the plant, brought about by cultivation. We have continually bred away from seed production, to tuber production, and we could doubtless breed back again, if we desired, to seed production, at the expense of tuber production.

Mr. Ware asked, whether if the potato blight had manifested itself in a small way, spraying would check it.

To this the lecturer answered, that it is important to begin spraying before the blight appears, for it spreads very rapidly. If done in season it would check it.

Mr. Harrison stated, that in planting potatoes some advocate the planting of small tubers and some of large ones, cutting these latter to two eyes. He asked the lecturer's opinion on this matter.

Professor Jones answered that it is the result of experience that the more weight of seed you put into the ground, the more yield. You get more yield where you put in more starch as food for the young plants.

We can best afford to take ten or fifteen bushels of seed to the acre under ordinary New England conditions. He approved of planting small potatoes whole, and larger ones cut in halves.

Mr. Ware asked at what stage of growth they should be sprayed.

Professor Jones replied that spraying should begin promptly after blossoming, or perhaps, one application may be made before the blooming period, when the plant is in its most vigorous growth.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1903.

PART II.

BOSTON:
PRINTED FOR THE SOCIETY,
1904.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, April 4, 1903.

A duly notified stated meeting of the Society was held at eleven o'clock today, the President, O. B. HADWEN, in the chair.

The President reported from the Executive Committee a recommendation for the appropriation of one hundred dollars, to be paid to Aaron Low for services as Chairman of the Committee on Lectures and Publications, and, on motion of Wm. C. Strong, the recommendation was adopted.

The President also reported from the Executive Committee a recommendation that the sum of one hundred dollars be appropriated for prizes to be awarded at the meeting of the Chrysanthemum Society of America on November 10-12 of this year. The prizes to be given to members of the Massachusetts Horticultural Society exhibiting at that meeting. On motion of Mr. Strong the recommendation was adopted.

Mr. Strong spoke of the Biennial Session of the American Pomological Society which is to be held at Horticultural Hall, Boston, September 10-12, 1903, and moved that a committee of five be appointed to make such preparation as may be necessary.

The motion was adopted and the President appointed as the committee, William C. Strong, William H. Spooner, E. W. Wood, William H. Elliott, and John A. Pettigrew.

Under the head of Deferred and New Business, Dr. Henry P. Walcott moved, that the new By-laws which had been proposed at the January meeting be accepted and adopted.

As chairman of the committee on revision of the Constitution and By-laws, he stated that the new By-laws had been twice read at the January meeting, a copy had been mailed to every member of the Society, and, in accordance with the requirement of the present Constitution, had been referred to this meeting for final action.

Mr. Strong inquired if the amendments adopted at the January meeting were carried with the vote of today. The President answered that they were.

The motion of Dr. Walcott was then put and unanimously voted.

Michael H. Norton offered to the Society as a gift from Mrs. Robert M. Bailey of Dedham, granddaughter of General H. A. S. Dearborn, the first President of the Massachusetts Horticultural Society, the manuscript of the address delivered by General Dearborn on the occasion of the first anniversary of the Society, September 19, 1829. It was voted to accept the gift of Mrs. Bailey and to convey to her the thanks of the Society for the interesting relic.

The following named candidates having been duly recommended by the Executive Committee were, on ballot, elected to membership:

Scott Doten of Jamaica Plain,
Miss Mabel Cabot of Brookline,
Edward R. Cogswell, Jr. of Cambridge.

A communication from Arthur Cowee of Berlin, N. Y. was read, offering as a prize for the best display of Groff's Hybrid gladioli, one hundred of his Gold Medal and Silver Trophy strain varieties. On motion of Mr. Strong it was voted to accept the offer of Mr. Cowee and to refer it to the Committee on Establishing Prizes.

On motion of John Parker it was voted to refer the Dearborn manuscript to the Committee on Publication.

On motion of Mr. Spooner the meeting was dissolved.

WILLIAM P. RICH,
Secretary.

BUSINESS MEETING.

SATURDAY, July 11, 1903.

A duly notified stated meeting of the Society was held at eleven o'clock today, the President, O. B. HADWEN, in the chair.

Kenneth Finlayson, chairman of the committee appointed to prepare a memorial of the late Benjamin Grey, reported as follows:

IN MEMORY OF BENJAMIN GREY.

Benjamin Grey, late of Malden, the well-known florist, nymphæa and orchid grower, died at his home, March 5th, aged fifty-six years and six months. He had been a life member of the Massachusetts Horticultural Society for many years.

He was born at Ayton, Yorkshire, England, August 7th, 1846, and at the age of seven years came with his parents to America, settling for a while in the West. He afterward came East to Farmington, Connecticut, and later with his parents moved to Albany, New York, where his father, the late William Grey, was superintendent of the estate of Hon. Erastus Corning, the owner of one of the best known orchid and plant collections in the country. Here Mr. Grey learned his profession.

At the breaking out of the Rebellion he enlisted in the 177th New York Volunteers and afterward in the 123d Independent Battery, which was later transferred to the 8th Artillery, participating in the noted battles of Cold Harbor, Port Hudson, Spottsylvania, Fall of Richmond, and Lee's Surrender.

Returning home he engaged in his favorite occupation of gardening for several years, part of the time in the employ of Edward S. Rand of Dedham, Massachusetts, owner, as will be remembered by the older members of this Society, of a noted collection of orchids, as well as of other choice plants.

Thereafter Mr. Grey engaged in the business of a florist spending most of his time in Malden, the place of his demise.

To Mr. Grey, more than to anyone else, is due, we believe, the credit of priority for the cultivation of the orchid and nymphæa for commercial purposes in the New England states, if not throughout the country at large; no small testimony to his innate love for the beautiful in floriculture; and to this particular branch of plant life he chiefly confined his energies in late years.

Mr. Grey was a most genial and social person, keen and observant of nature's treasures.

He is survived by his wife, Harriet O. Grey, and three daughters. Two brothers, both gardeners, also survive him, one of them being Robert M. Grey late at the Oakes Ames estate at North Easton, Massachusetts, and until recently a member of the plant committee of this Society.

Resolved, that in the death of Benjamin Grey, the Massachusetts Horticultural Society has lost an esteemed associate, a valued horticulturist, and a staunch defender of his adopted country's honor and dignity.

Resolved, that this memorial be printed in the Transactions of the Society and that a copy be forwarded to his bereaved family.

KENNETH FINLAYSON,
DAVID F. ROY,
PATRICK NORTON. } *Committee.*

On motion of John L. Bird the memorial was accepted and referred to the Committee on Publication.

The President reported from the Executive Committee a recommendation for the appropriation of twenty-five dollars, towards the purchase of an additional card-catalogue case for the library. On motion of William H. Spooner the recommendation was adopted.

The Secretary reported the death of ten members since the last meeting of the Society.

William C. Strong, in referring to the number of deaths, thought it would not be possible nor convenient to appoint a special committee for each one and moved, and it was voted, that the Secretary be appointed necrologist and that he prepare suitable memorials of the deceased members for publication in the Transactions of the Society.

On motion of Mr. Strong the President appointed the following named members a committee to represent the Society at the approaching Biennial Session of the American Pomological Society:

PRESIDENT O. B. HADWEN, *Chairman*,

WILLIAM C. STRONG,	J. K. M. L. FARQUHAR,
WILLIAM H. SPOONER,	JOSEPH H. WOODFORD,
HON. J. R. LEESON,	HENRY W. WILSON,
E. W. WOOD,	JACOB W. MANNING,
GEN'L F. H. APPLETON,	B. M. WATSON,
HON. AARON LOW,	CHARLES W. PARKER,
BENJAMIN P. WARE,	JAMES H. BOWDITCH,
BENJAMIN C. CLARK,	WARREN FENNO,
CHARLES F. CURTIS,	J. WILLARD HILL,
WILLIAM H. ELLIOTT,	GEORGE F. PIERCE,
JOHN L. BIRD,	F. W. DAMON,
HARLAN P. KELSEY,	J. WOODWARD MANNING

A communication from Miss Sarah B. Fay of Woods Hole was read, offering the sum of fifty dollars to be competed for by amateur rose growers at the Rose and Strawberry Exhibition of June 16 and 17. As these prizes were not awarded on the dates mentioned, owing to lack of exhibits, it was moved and voted that the Secretary confer with Miss Fay and ascertain if the offer would continue for another year.

A letter from Robert Farquhar was read, containing his resignation as a member of the Committee of Arrangements and it was voted to accept the resignation.

A letter of acknowledgment from Fred L. Harris was read, conveying to the Society his thanks for the copy of the memorial adopted in memory of his father, the late Frederick L. Harris.

The following named persons having been duly recommended by the Executive Committee were, on ballot, elected to membership:

BENJAMIN C. MARBLE of Manchester-by-Sea,
JOHN LOWELL of Newton,
CYRUS ALGER HAWES of Boston,
JAMES A. LOWELL of Chestnut Hill.

On motion of Mr. Spooner it was voted that the meeting be dissolved.

WILLIAM P. RICH,
Secretary.

BUSINESS MEETING.

SATURDAY, October 3, 1903.

A duly notified stated meeting of the Society (the last under the Constitution and By-laws of 1895) was held at eleven o'clock today, the President, O. B. HADWEN, in the chair.

On the recommendation of the Executive Committee an appropriation of one hundred dollars was voted in payment for the decoration of the halls with plants and flowers on the occasion of the recent Biennial Session of the American Pomological Society.

On motion of William H. Spooner the thanks of the Society were voted to Robert Farquhar in recognition of his services as a member of the Committee of Arrangements.

A communication from William N. Craig, head gardener to Miss Mary S. Ames of North Easton, Massachusetts, was read, offering as a gift to the Society, six large palms of several varieties which would be useful for decorative purposes in the exhibition halls.

On motion of William C. Strong it was voted to accept the gift of Miss Ames, and that the thanks of the Society be conveyed to her, and also to Mr. Craig for his interest in the matter.

Joseph S. Chase offered the following motion:

In consideration of the value of the Foster peach, originated by Joshua T. Foster, late a member of this Society, and in recognition of his valuable service in the interests of pomology, it is hereby voted that a silver-gilt medal of the Society, suitably inscribed, be presented to the family of Mr. Foster.

Mr. Chase, in support of his motion, called attention to the fact that this peach which was frequently shown at the exhibitions of the Society twenty-five to thirty years ago and awarded numerous prizes for its excellence, was still favorably known. He thought as a matter of justice to the memory of Mr. Foster, who has now passed away, that a medal of the Society should be voted.

Mr. Strong seconded the motion, if a medal had not been awarded previously.

E. W. Wood remarked that the Foster peach was today well and favorably known to fruit growers.

The Secretary referred to several of the reports of the Fruit Committee from 1865 to 1879 in which the Foster peach was highly praised.

The motion of Mr. Chase was unanimously voted.

The following named persons having been duly recommended by the Executive Committee were, on ballot, elected to membership:

ROBERT JOHNSTON of Lexington,
STEPHEN CHILD of Auburndale.

The meeting was then dissolved.

WILLIAM P. RICH,
Secretary.

BUSINESS MEETING.

SATURDAY, November 14, 1903.

In accordance with the requirement of the Preliminary Section of the By-laws adopted April 4, 1903, the annual meeting of the Massachusetts Horticultural Society for the year 1903 was held today at Horticultural Hall, the President, O. B. HADWEN, in the chair.

The meeting was called for the election of officers for the ensuing year and for the transaction of such other business as might legally be presented; and a printed notice of the meeting had been mailed to the address of every member of the Society as it appeared upon the records of the Secretary.

The Executive Committee reported a recommendation that the following amounts be appropriated for prizes, gratuities, and lectures for the year 1904:

For Plants	$1,500.00
" Flowers	1,875.00
" Native Plants	125.00

For Fruits	$1,275.00
" Vegetables	900.00
" Gardens and Greenhouses . . .	375.00
" Lectures	200.00

On motion of Michael Sullivan these appropriations were unanimously voted.

A communication from Kenneth Finlayson was received, resigning the chairmanship of the Committee on Flowers, to date back to August 8, and, on motion of William H. Spooner, the resignation was accepted and the thanks of the Society were voted to Mr. Finlayson for his services on the committee.

On motion of Patrick Norton it was voted that Julius Heurlin be appointed chairman of the Committee on Flowers for the remainder of the year from August 8.

On motion of Mr. Norton it was voted that all reports of officers and standing committees for the current year be referred for acceptance to the Committee on Publication with the exception of the report of the Treasurer which was referred to the Finance Committee.

On motion of Mr. Spooner a recess until ten minutes of twelve was voted and at that time the President again called the meeting to order and announced that the next business was the choosing of officers for the year 1904.

He appointed as a committee to receive, assort, and count the votes, J. Allen Crosby, Patrick Norton, and William P. Rich.

The polls were declared open at twelve o'clock, noon, and the ballots were prepared in accordance with the Australian system. The President, being obliged to leave, called Edward B. Wilder to preside during the remainder of the meeting. At four o'clock P. M. the President *pro tempore* declared the polls closed and the committee on balloting presented a report of which the following is a copy.

"The members of the Society, qualified to vote at its meetings, assembled at Horticultural Hall on Saturday, November 14, 1903, at a meeting duly called as provided for in the By-laws. The following persons were present and served as a committee to receive, assort, and count the ballots: J. Allen Crosby, Patrick Norton, William P. Rich."

The polls were opened at twelve o'clock, noon, and closed at four o'clock in the afternoon. The ballots having been sorted and counted by the committee, the result was as follows:

For President.

HENRY P. WALCOTT, M. D.

For Vice-Presidents.

WALTER HUNNEWELL, (For two years).
WARREN W. RAWSON, (For one year).

For Treasurer.

CHARLES E. RICHARDSON.

For Secretary.

WILLIAM P. RICH.

For Trustees (for three years).

WILLIAM N. CRAIG,
J. K. M. L. FARQUHAR,
ARTHUR D. HILL,
CHARLES S. SARGENT.

For Trustees (for two years).

OAKES AMES,
ARTHUR H. FEWKES,
CHARLES W. PARKER,
WILLIAM H. SPOONER.

For Trustees (for one year).

ARTHUR F. ESTABROOK,
ROBERT T. JACKSON,
JOHN A. PETTIGREW,
MICHAEL SULLIVAN.

For Nominating Committee.

WALTER C. BAYLIES,
WILLIAM H. ELLIOTT,
NATHANIEL T. KIDDER,
RICHARD M. SALTONSTALL,
C. MINOT WELD.

Whole number of ballots cast 55.

J. ALLEN CROSBY,
PATRICK NORTON,
WM. P. RICH.
Committee.

The presiding officer, Mr. Wilder, declared the list as presented by the ballot committee to be the duly elected officers of the Society for the year 1904 and the meeting was dissolved.

WILLIAM P. RICH,
Secretary.

REPORT

OF THE

COMMITTEE ON PLANTS

FOR THE YEAR 1903.

By ARTHUR H. FEWKES, CHAIRMAN.[1]

A review of the work of this department for the year shows that but few exhibits out of the ordinary have been made although as a whole they have been of excellent quality. While last year was a phenomenal one in the way of new introductions the present has been nearly the reverse, and we have only a few new things to record. A detailed description of these follows.

On January 3 George McWilliam was awarded a First Class Certificate of Merit for a fine seedling, hybrid *Cypripedium*, "Hildegarde Lasell," the result of a cross between *Cypripedium* × *Schlessingerianum* var. "W. W. Lunt" and *Cypripedium* × *Leeanum*. On the next Saturday he showed another fine hybrid, "Marion Lasell," for which he received the same award, a First Class Certificate of Merit. The seed parent was the same as the foregoing, but *Cypripedium Spicerianum* was used for the pollen parent instead of *Cypripedium* × *Leeanum*.

[1] CORRECTION. In the report of the Committee on Plants in the TRANSACTIONS for 1902-II an error occurred in printing portions of lines 32 to 34, page 146, which should read: Its seed parent was the same as the Farquhar rose but the Hybrid Perpetual variety, Mme. Gabrielle Luizet, was used as pollen parent.—*Ed.*

The same day Mr. McWilliam exhibited a form of *Cypripedium* × *Leeanum* which was very interesting from the fact that it was the result of a cross between *Cypripedium Spicerianum* and *Cypripedium insigne* var. *Sanderæ*, the latter having been used with the supposition that its decided yellow color would be imparted to the progeny, but hardly a trace of yellow was apparent, the flowers being inferior to those produced where the ordinary form of *insigne* was used for pollen parent, as was proven by several cut flowers which were shown at the same time for comparison. The plant from which these latter were cut was shown on the next Saturday, January 17, and a Society's Silver Medal was awarded for it. The variety is named "G. M. Whitin," and is very distinct in color, the standard being nearly pure white, while the other parts are quite a decided yellow.

On February 7 J. E. Rothwell showed a hybrid lælia, *Lælia* × *Yula*, (*L. purpurata* × *L. cinnabarina*). This is the brightest of the *cinnabarina* crosses that have come under our notice and we awarded the Society's Silver Medal for this. He also showed a fine new seedling, *Cypripedium* × *nanum* var. "Zenobia," (*C.* × *Leeanum* × *C.* × *Lathomianum*) for which he received the Society's Bronze Medal.

March 7 Walter P. Winsor showed two fine new hybrid dendrobiums, *Dendrobium* × *Rolfeæ*, (*D. nobile* × *D. primulinum*), and *Dendrobium* × *Wigamiæ*, (*D. signatum* × *D. nobile*). The former is in the way of *D. nobile* but exceedingly delicate in coloring and the latter has the habit of *D. nobile* but more slender, while the flowers are creamy white in color with a crimson throat. A First Class Certificate of Merit was awarded to each of them.

At the Spring Show, March 18, Henry A. Dreer, Inc. exhibited their new golden pandanus, *Pandanus Sanderi* for which they received the Society's Silver Gilt Medal. This variety seems to be much stronger in habit than the old *P. Veitchii*, but it is questionable whether it is any more beautiful than the latter when well grown. The delicate cream white of the *Veitchii* is replaced by a rich golden shade in the *Sanderi*, but the variegation seems

less pronounced in the new variety and shades more into the natural green of the leaf.

Honorable Mention was awarded Walter P. Winsor for a variety of *Adiantum cuneatum* of remarkable size of frond and form of pinnules.

A First Class Certificate of Merit was awarded Wm. Thatcher for a seedling asparagus without name which is of beautiful drooping habit, in the way of *A. decumbens*, and of a bluish-green color.

M. H. Walsh exhibited a seedling hybrid rose of much promise. It is of the rambler type and is a cross between Crimson Rambler and Paul's Carmine Pillar. The plant exhibited was two years old from the seed and showed great vigor, the foliage being a bright, glossy green, and the single flowers are a fine carmine-red color with lighter center. The variety is named Hiawatha, and a First Class Certificate of Merit was awarded Mr. Walsh for it.

Bancroft Winsor was awarded Honorable Mention for Sutton's fine new cyclamen, Sutton's Salmon Pink.

April 4 Mr. Walsh again exhibited the same plant of his new seedling rose, Hiawatha, that he had on exhibition at the Spring Show. It was in fine condition and remarkably full of flowers.

He also showed another seedling rambler rose named Minnehaha, a cross between *Rosa Wichuraiana* and Paul Neyron. The flowers are full double, deep rose-pink in color, darker than the Farquhar rose or Dorothy Perkins. This seems to be a very promising pillar rose with fine foliage and great freedom of bloom, impressing us as worthy of the Society's Silver Medal which was awarded.

May 9 J. E. Rothwell was awarded a First Class Certificate of Merit for an interesting seedling orchid, *Lælia cinnabarina* × *Cattleya Percivaliana* and again the same award on June 6 for a seedling orchid *Lælia* × *Ragotiana*, (*L. grandis* × *L. cinnabarina*). This same day David F. Roy exhibited his seedling canna, Mrs. E. S. Converse, the same variety that was shown by him last year and received Honorable Mention. It is deep red in color and remarkably dwarf and floriferous in habit, and appeared so much better this season than last that we considered it worthy of a First Class Certificate of Merit which was accordingly awarded.

August 1 Oakes Ames exhibited a fine new seedling cypripedium, *C.* × *Chamberlaino-Rothschildianum* for which he was awarded the Society's Silver Medal.

At the Annual Show, September 24, Henry A. Dreer, Inc. was awarded Honorable Mention for two new plants, *Pennisetum macrophyllum atrosanguineum* and *Asparagus myriocladus*. The former although not a hardy plant is one of the most distinct of grasses and its purplish-red foliage should make it a welcome addition to the ornamental varieties. The asparagus is a plant of much promise, but owing to the limited exhibit the committee did not feel justified in giving a higher award at this time and would urge a further display, as there seems to be a question of freedom in growth, which is a prerequisite of commercial value.

J. E. Rothwell brought to the Chrysanthemum Show two fine seedling orchids, one, *Lælia tenebrosa* × *Cattleya Gaskelliana*, resembles its seed parent in form of flower but with the large size of the pollen parent. The color is a clear deep rosy-lilac throughout except the lip which is blotched with a deeper shade. This received a First Class Certificate of Merit. The other, *Lælio-Cattleya Bowring-Clive*, was one of the most remarkable seedlings ever shown before us, and was the result of a cross between *Cattleya Bowringiana* and *Lælio-Cattleya Clive*. The flower is of medium size, of the lælia type, of a clear rosy-lilac in color, with the lip and throat very deep maroon-crimson, prominently marked with a peculiar, crosswise blotch of light yellow, making a most beautiful and unique flower, worthy of the award given it: the Society's Silver Gilt Medal.

On November 14 Mr. Rothwell received a First Class Certificate of Merit for *Lælio-Cattleya Pallas*, (*L. cripsa* × *C. Dowiana aurea*). The flowers are of good size with delicate lavender sepals and petals, the lip rich crimson-purple bordered with white. A marked peculiarity in the specimen exhibited was the diversity of markings of the throat in different flowers. In some it was simply blotched with yellow while in others it was shaded and veined.

Beside the special awards for new plants we have made several others for meritorious displays and for superior cultivation.

In the former class we awarded Lager & Hurrell on March 18 a Silver Gilt Medal for a very extensive and beautiful display of orchids, and on November 5 Mrs. John L. Gardner Honorable Mention for a plant of the yellow-flowered solandra, *Solandra lævis.*

For superior cultivation our first award, a Silver Medal, was made to George Melvin, gardener to Col. Charles Pfaff, who showed on January 31 a fine specimen of *Oncidium unguiculatum* carrying two magnificent spikes of bloom five feet in length. He was also awarded on April 11 a Silver Medal for a remarkably well grown plant of *Dendrobium fimbriatum oculatum*, and on October 3 a First Class Certificate of Merit for a plant of *Miltonia candida* carrying forty flowers.

March 7 Peter Murray, gardener to Walter P. Winsor, was awarded the Society's Bronze Medal for a finely grown plant of *Odontoglossum Rossii majus* and on May 23 he was awarded the Silver Medal for a plant of *Cœloggne Dayana* with eleven spikes and about four hundred blooms. The plant had been under his care for about five years and had steadily improved from year to year.

March 18 James Stuart, the grower of the magnificent plants of *Cyclamen Persicum* exhibited by George F. Fabyan, was awarded a Society's Silver Medal.

One other exhibit which we deemed worthy of a special cultural award, the Society's Bronze Medal, was made at the Annua Show, September 24, by Mrs. M. L. Atwood of Bridgewater, Massachusetts. Her display consisted of achimenes grown in the window of her own home and while there was but one variety represented, the exhibit was instructive and served to illustrate the adaptability of this plant for window cultivation.

In reviewing the exhibitions of the year several displays should receive special notice as being of unusual character or excellence. In this connection we would speak of the display made by R. & J. Farquhar & Co. of the Farquhar rose at the Spring Show, March 18. A few plants were shown a year ago and it seemed of such unusual merit that a high award was made it. Their exhibit at this show fully justified the award then made and showed the

remarkable vigor of the variety in a marked manner. In scarcely eighteen months from the time the original plant was purchased they had been able to propagate thousands of small plants beside growing a sufficient number of large ones for this exhibit which were arranged as a decoration for the rear end of the hall and made a complete screen. The older plants beside making a vigorous growth had also produced many flowers, but the younger bore only a few. Evidently the greatest value in this rose lies in its wonderful vigor and its adaptability for covering purposes, for many of the plants shown had made shoots fully twenty feet in length with bright, glossy leaves.

The displays of cyclamens at this same show should also be mentioned, for in many ways they excelled any previous exhibits we have been called upon to examine. We refer particularly to the plants shown by George F. Fabyan and Jason S. Bailey, those of the former being particularly meritorious.

At the Annual Exhibition, September 24-27, the Yamanaka Company made a display of dwarfed trees and miniature gardens. The trees though few in number were exceedingly interesting from their great age, large size, and careful training. The two largest of the group were a pair of retinisporas, (*Retinispora obtusa nana*) and were claimed to be between four and five hundred years old. Considering the extreme slowness of growth peculiar to this variety under the most favorable conditions, the claim can hardly be doubted for the trees were about five feet in height and nearly as broad. The Society's Silver Gilt Medal was awarded for this display.

The crotons were another prominent feature, particularly the large specimens from Mrs. J. W. Tufts.

One of the most interesting displays came from the Harvard Botanic Garden and included many curious species as well as beautiful specimens. Among them we noted a fine collection of nepenthes and as these interesting plants have not been shown at our Annual Exhibition for several years it was gratifying to have them again exhibited.

The displays of orchids were not up to their usual mark, Messrs. Lager & Hurrell furnishing the only exhibit.

At the Chrysanthemum Show the large specimen plants were, as usual, the center of interest and the plants from Herbert Dumaresq, J. S. Bailey, E. S. Converse, E. W. Converse, and E. A. Clark have been seldom, if ever, excelled.

Your committee feels that our chrysanthemum shows are lacking in variety and would call attention to the sameness which seems to characterize them. Some effort should be made to introduce new features, in connection with the old, which will make them more attractive and instructive.

The chrysanthemum is a plant with which an endless variety of artistic decorative effects can be produced and it is in this direction, it seems to us, that a remedy can be found.

July 8, on invitation from J. Tailby & Son, the committee visited their grounds at Wellesley to inspect, as it grows in the field, their hybrid calla, Mrs. Theodore Roosevelt, for which an award was made them last season. We found it growing vigorously, in large numbers, and holding true to the characteristics of the plants shown before us last year, and we feel that the plant is fully worthy of the award made at that time.

For the prizes offered by the Society of American Florists and Ornamental Horticulturists there have been three entries; one by J. Tailby & Son, hybrid calla, Mrs. Theodore Roosevelt; another by D. F. Roy, seedling canna, Mrs. E. S. Converse; and another by Col. Charles Pfaff, seedling pelargonium, Mrs. Charles Pfaff.

We have awarded the first prize, a Silver Medal, to J. Tailby & Son for their hybrid calla, and the second prize, a Bronze Medal, to D. F. Roy for his seedling canna.

We will close our report with a word in appreciation of the displays of large bays, palms, and other decorative plants contributed to all but the last of our large exhibitions by R. & J. Farquhar & Co. These plants were not only fine specimens individually but have been of great value in decorating the hall; their value for this purpose was most keenly felt at the Chrysanthemum Show when we were without them and emphasized the necessity of offering prizes for classes which will fill this want.

We have awarded during the year in prizes and money gratuities			$1,340.00
Four Silver Gilt Medals	@	$10.00	40.00
Eight Silver "	"	5.00	40.00
Three Bronze "	"	3.00	9.00
Estimated cost of lettering and cases for fifteen Medals	"	2.25	33.75
			$1,462.75
Appropriation for plants for 1903			$1,500 00
Amount awarded as above			1.462.75
Unexpended balance			$37.25

We have also awarded thirteen First Class Certificates of Merit and five Honorable Mentions.

PRIZES AND GRATUITIES AWARDED FOR PLANTS.

1903.

JANUARY 3.

PRIMULA SINENSIS.—Six plants in not less than six-inch pots:
1st, Mrs. John L. Gardner, $4.

PRIMULA STELLATA.—Six plants in not less than six-inch pots:
1st, Mrs. John L. Gardner, $4.

PRIMULA OBCONICA HYBRIDS.—Six plants in not less than six-inch pots:
2nd, Mrs. John L. Gardner, $3.

Gratuity:—

Mrs. John L. Gardner, *Euphorbia Jacquiniæflora* and *Primula Sinensis alba plena*, $2.

FEBRUARY 7.

FREESIAS.—Six pots or pans:
1st, Col. Chas. Pfaff, $5.

Gratuities:—

Edward J. Mitton, Display of *Primula Sinensis*, $2.
J. E. Rothwell, Display of Orchids, $5.

MARCH 7

Gratuity:—

Walter P. Winsor, *Odontoglossum triumphans*, $2.

SPRING EXHIBITION.

MARCH 18, 19, 20, 21, 22.

Theodore Lyman Fund.

INDIAN AZALEAS.—Specimen plant, named:
1st, E. W. Breed, $8; 2nd, Wm. S. Ewell & Son, $6.

Society's Prizes.

ORCHID.— Single plant:
1st, Jason S. Bailey, $10; 2nd, Walter P. Winsor, $6.

STOVE OR GREENHOUSE PLANTS.—Specimen in bloom other than Azalea or Orchid:
1st, Mrs. John L. Gardner, $8.

HARDY POLYANTHUSES.— Twelve plants of distinct varieties:
1st, W. Whitman, $6; 2nd, Mrs. John L. Gardner, $4.

CYCLAMENS.— Ten plants:
1st, Geo. F. Fabyan, $15; 2nd, Geo. F. Fabyan, $12; 3d, Jason S. Bailey, $10.

Ten plants in not over seven-inch pots:
1st, Jason S. Bailey, $8; 2nd, Geo. F. Fabyan, $6; 3d, Jason S. Bailey, $4.

Single plant:
1st, Geo. F. Fabyan, $5; 2nd, Geo. F. Fabyan, $4.

CINERARIAS.— Six varieties:
1st, Geo. F. Fabyan, $10; 2nd, Mrs. John L. Gardner, $8; 3d, Edward J. Mitton, $6.

Three varieties:
1st, Geo. F. Fabyan, $6; 2nd, Mrs. John L. Gardner, $5; 3d, Edward J. Mitton, $4.

Single plant:
1st, Mrs. John L. Gardner, $3; 2nd, Geo. F. Fabyan, $2.

HYACINTHS.— Twelve named varieties, in pots, one in each pot:
1st, Mrs. John L. Gardner, $8; 2nd, Mrs. John L. Gardner, $5.

Six named varieties, in pots, one in each pot:
1st, Mrs. John L. Gardner, $5; 2nd, Mrs. John L. Gardner, $4.

Single named bulb, in pot:
1st, Mrs. John L. Gardner, $2; 2nd, Mrs. John L. Gardner, $1.
Three pans, not to exceed twelve inches, ten bulbs of one variety in each pan:
1st, Mrs. John L. Gardner, $6.
Two pans, not to exceed twelve inches, ten bulbs of one variety in each pan:
1st, Mrs. John L. Gardner, $4.
Single pan, not to exceed twelve inches, with ten bulbs of one variety:
1st, Mrs. John L. Gardner, $3; 2nd, Mrs. John L. Gardner, $2; 3d, Bussey Institution, $1.

TULIPS.— Six eight-inch pans, nine bulbs of one variety in each:
1st, Wm. S. Ewell & Son, $6; 2nd, Bussey Institution, $4; 3d, Wm. S. Ewell & Son, $2.
Three eight-inch pans, nine bulbs of one variety in each:
1st, Bussey Institution, $3; 2nd, Wm. S. Ewell & Son, $2; 3d, Wm. S. Ewell & Son, $1.
Three ten-inch pans, twelve bulbs of one variety in each:
1st, Wm. S. Ewell & Son, $5; 2nd, Bussey Institution, $4; 3d, Wm. S. Ewell & Son, $3.

POLYANTHUS NARCISSUS.— Four seven-inch pots, four bulbs in each, distinct varieties:
2nd, Bussey Institution, $3.

JONQUILS.— Six pots or pans, not exceeding eight inches, the number of bulbs in each to be at the discretion of the grower:
1st, Wm. Whitman, $4; 2nd, Bussey Institution, $3.

NARCISSUSES.— Six eight-inch pans, distinct varieties, single or double:
1st, Wm. S. Ewell & Son, $6; 2nd, Bussey Institution, $4.
Three eight-inch pans:
1st, Wm. S. Ewell & Son, $3; 2nd, Bussey Institution, $2.

LILY OF THE VALLEY.— Six pots or pans, not exceeding eight inches:
1st, Bussey Institution, $4.

CROCUSES.— Three boxes, each eight by twelve inches, three distinct varieties:
1st, Bussey Institution, $3; 2nd, Bussey Institution, $2.

ROMAN HYACINTHS — Six eight-inch pans, ten bulbs in a pan:
1st, Wm. S. Ewell & Son, $4; 2nd, Bussey Institution, $2.

GENERAL DISPLAY OF SPRING BULBS AND PLANTS.— All classes:
1st, Wm. S. Ewell & Son, $30; 2nd, Bussey Institution, $20.

Gratuities: —

James L. Little, *Azalea mollis* and Freesias, $5.
Walter Hunnewell, *Aculba Japonica* in fruit, and ferns, $10.
Mrs. Quincy A. Shaw, *Crinum Macowani*, $3.

Mrs. A. W. Blake, Group of Amaryllis, $6.
Bussey Institution, Forced Shrubs, $6.
R. & J. Farquhar & Co., display of the Farquhar Rose, $35.
Jason S. Bailey, display of Cinerarias, Cyclamens, Azaleas, and Palms, $18.
Bussey Institution, display of native plants, forced, $15.

MAY 9.

INDIAN AZALEAS.— Six plants in pots, named:
2nd, Mrs. A. W. Blake, $8.
Single specimen:
1st, Mrs. A. W. Blake, $4.
CALCEOLARIAS.— Six varieties, in pots:
1st, Geo. F. Fabyan, $10.
Single plant:
1st, Geo. F. Fabyan, $3: 2nd, Geo. F. Fabyan, $2.
PELARGONIUMS.— Six named Show or Fancy varieties, in not less than eight-inch pots, in bloom:
1st, Edward J. Mitton, $10.

Gratuities: —

James L. Little, Display of Amaryllis and Streptocarpus, $8.
J. E. Rothwell, Display of Orchids, $15.
Mrs. A. W. Blake, Display of *Clerodendron Thompsonæ*, $5.

MAY 23.

Gratuity: —

I. E. Coburn, Display of *Trollius Europæus*, $3.

RHODODENDRON EXHIBITION.

JUNE 6. (*Changed from June 5, 6, 7*).

ORCHIDS.— Display, arranged for effect, with foliage plants, in a space eight feet by five feet:
1st, J. E. Rothwell, $25.

Gratuities: —

Mrs. John L. Gardner, *Cypripedium Parishii*, $1.
Lager & Hurrell, Display of Orchids, $15.
Mrs. A. W. Blake, Display of plants, $7.

JUNE 16.

Gratuities: —

Mrs. John L. Gardner, Display of Gloxinias, $10.
Col. Chas. Pfaff, *Odontoglossum læve*, $2.
W. A. Manda, Inc. Display of Orchids, $15.

SEPTEMBER 12.

Gratuity: —

Col. Chas. Pfaff, *Oncidium incurvum*, $3.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 24, 25, 26, 27. (*Changed from Sept. 10, 11, 12, 13*).

PALMS.— Pair, in pots or tubs not less than eighteen inches in diameter:
1st, Jason S. Bailey, $12.
Pair, in pots not more than fourteen inches in diameter:
1st, Jason S. Bailey, $8; 2nd, A. F. Estabrook, $6.

GREENHOUSE PLANTS.— Best furnished group containing foliage plants of all descriptions, arranged for effect, covering two hundred square feet:
1st, Jason S. Bailey, $50; 2nd, E. S. Converse, $35.
Six Greenhouse or Stove plants, decorative specimens of different named varieties, two Crotons admissible:
1st, Jason S. Bailey, $20.

CENTER PIECE FOR TABLE.— For fifteen covers, living plants, in one receptacle, only one entry admissible:
1st, J. E. Rothwell, $10; 2nd, Edward J. Mitton, $8; 3d, Mrs. E. M. Gill, $6.

FLOWERING GREENHOUSE PLANT.— Single specimen, named:
1st, Jason S. Bailey, $8; 2nd, Mrs. John L. Gardner, $6.

CALADIUMS.— Six named varieties:
2nd, A. F. Estabrook, $6.

FERNS.— Five named varieties, no Adiantums admissible:
1st, Jason S. Bailey, $10; 2nd, A. F. Estabrook, $8.
Specimen other than Tree Fern:
1st, Jason S. Bailey, $4; 2nd, A. F. Estabrook, $3.

ADIANTUMS.— Five named varieties:
1st, A. F. Estabrook, $8.

DRACÆNAS.— Six named varieties:
1st, Jason S. Bailey, $8; 2nd, E. S. Converse, $5.

CROTONS.— Twenty-five plants, not less than eighteen named varieties, in not less than six-inch pots:
1st, Edward J. Mitton, $12; 2nd, Jason S. Bailey, $10.
Six named varieties, in not less than eight-inch pots:
1st, Mrs. J. W. Tufts, $10.
BEGONIA REX.— Ten pots of ten varieties:
1st, E. S. Converse, $10.
OUVIRANDRA FENESTRALIS.—
1st. E. S. Converse, $6; 2nd, Mrs. John L. Gardner, $4.

Gratuities: —

R. & J. Farquhar & Co., Collection of Palms and Bays, $15.
J. E. Rothwell, *Cœlogyne Massangeana*, $1.
Edward J. Mitton, Display of Orchids, $8.
Lager & Hurrell, " " " $10.
Wm. B. Roberts, Coleus and Begonia Rex, $4.
Mrs. J. W. Tufts, Crotons, $4.
Mrs. John L. Gardner, Display of plants, $25.
Botanic Garden, Group of plants, $35.
Botanic Garden, Nepenthes, $5.
E. S. Converse, Display of Crotons, Ferns, and Begonias, $7.
Mrs. John L. Gardner, *Asparagus deflexus*, $1.
Mrs. John L. Gardner, *Gonioplebium subauriculatum*, $1.
L. H. Foster, Display of Nephrolepis "Anna Foster," $5.
M. Dinsmore, House grown Begonias, $3.

CHRYSANTHEMUM SHOW.

NOVEMBER 5, 6, 7, 8.

Henry A. Gane, Memorial Fund.

CHRYSANTHEMUMS.— For the best specimen plant of Mrs. Jerome Jones, or any of the sports thereof:
1st, Jason S. Bailey, $5.
For the best specimen plant of Marcia Jones, or any of the sports thereof:
1st, E. S. Converse, $5.

Society's Prizes.

Display of eight named plants, any or all classes, distinct varieties:
1st, Herbert Dumaresq, $60; 2nd, Jason S. Bailey, $45; 3d, E. S. Converse, $35.
Display of ten named plants, any or all classes, distinct varieties, in not exceeding nine-inch pots of ordinary form:
1st, E. S. Converse, $35.

Three Japanese Incurved:
1st, E. W. Converse, $12; 2nd, E. A. Clark, $10.
Three Reflexed, distinct named varieties:
1st, Jason S. Bailey, $12; 2nd, E. A. Clark, $10.
Specimen Japanese Incurved, named variety:
1st, Herbert Dumaresq, $6; 2nd, Jason S. Bailey, $5.
Specimen Reflexed, named variety:
1st, E. S. Converse, $6; 2nd, Herbert Dumaresq, $5.
Specimen Anemone Flowered, named variety:
1st, E. S. Converse, $6; 2nd, Herbert Dumaresq, $5.
Specimen Pompon, named variety:
1st, Herbert Dumaresq, $4; 2nd, E. A. Clark, $3.
Twelve plants, of twelve different varieties, grown to one stem and bloom, in not over six-inch pots, preference being given to plants not more than three feet in height:
1st, E. S. Converse, $8; 2nd, James Nicol, $6; 3d, E. S. Converse, $4.
Six plants grown as above but all of one color, Red:
1st, E. S. Converse, $4; 2nd, James Nicol, $3.
White:
1st, James Nicol, $4; 2nd, James Nicol, $3.
Pink:
1st, E. S. Converse, $4; 2nd, James Nicol, $3.
Yellow:
1st, James Nicol, $4; 2nd, E. S. Converse, $3.
Any other color:
1st, James Nicol, $4; 2nd, E. S. Converse, $3.
Group of Chrysanthemums, arranged for effect, with palms and decorative foliage plants, limited to one hundred square feet:
1st, Mrs. John L. Gardner, $25.

Gratuities:—

Mrs. Geo. S. Harwood, Standard Chrysanthemums, $6.
E. S. Converse, Chrysanthemums, $5.
Lager & Hurrell, Display of Orchids, $15.
R. & J. Farquhar & Co., Display *Begonia Gloire de Lorraine*, $10.
E. W. Converse, Chrysanthemums, $5.
L. H. Foster, Display of Nephrolepis, "Anna Foster," $5.

SOCIETY'S SILVER GILT MEDALS.

Spring Exhibition, March 18-22. Henry A. Dreer, for *Pandanus Sanderi*.
Spring Exhibition, Lager & Hurrell, for Display of Orchids.
Annual Exhibition, September 24-27. Yamanaka Co., for Dwarfed Trees and Miniature Gardens.
Chrysanthemum Show, November 5-8. J. E. Rothwell, for *Lælio-Cattleya Bowring-Clive*.

SOCIETY'S SILVER MEDALS.

January 17. Geo. McWilliam, for *Cypripedium* × *Leeanum* var. G. M. Whitin.

" 31. George Melvin, for Superior Cultivation of *Oncidium unguiculatum*.

February 7. J. E. Rothwell, for *Lælia* × *Yula*.

Spring Exhibition, March 18-22, James Stuart, for Superior Cultivation of *Cyclamen Persicum*.

April 4. M. H. Walsh, for Seedling Rambler Rose, Minnehaha.

" 11. Geo. Melvin, for Superior Cultivation of *Dendrobium fimbriatum oculatum*.

May 23. Peter Murray, for Superior Cultivation of *Cœlogyne Dayana*.

August 1. Oakes Ames, for Seedling Cypripedium, *C.* × *Chamberlaino-Rothschildianum*.

SOCIETY'S BRONZE MEDALS.

February 7. J. E. Rothwell, for Seedling *Cypripedium* × *nanum* var. *Zenobia*.

March 7. Peter Murray, for Superior Cultivation of *Odontoglossum Rossii majus*.

Annual Exhibition, September 24-27. Mrs. M. L. Atwood, for Window Cultivation of Achimenes.

FIRST CLASS CERTIFICATES OF MERIT.

January 3. George McWilliam, for Cypripedium × Hildegarde Lascll.

" 10. George McWilliam, for " × Marion Lascll.

February 7. Henry T. Clinkaberry, for Cattleya × Mrs. Theodore Roosevelt.

March 7. Walter P. Winsor, for Dendrobium × *Rolfeæ*.

" 7. Walter P. Winsor, " " × *Wiganiæ*.

Spring Exhibition, March 18-22. Wm. Thatcher, for Seedling Asparagus.

" " " " M. H. Walsh, for Seedling Rambler Rose, Hiawatha.

May 9. J. E. Rothwell, for Seedling Orchid, *Lælio-Cattleya*.

June 6. J E. Rothwell, for " " *Lælia* × *Ragotiana*.

" 6. David F. Roy, for " Canna, Mrs. E. S Converse.

October 3. George Melvin, for Superior Cultivation of *Miltonia candida*.

Chrysanthemum Show, November 5-8. J. E. Rothwell, for Seedling Orchid *Lælia tenebrosa*.

November 14. J. E. Rothwell, for *Lælio-Cattleya Pallas* × *Cattleya Gaskelliana*.

HONORABLE MENTION.

..ring Exhibition, March 18-22. Walter P. Winsor, for *Adiantum cuneatum* var.

nnual Exhibition, September 24-27. Henry A. Dreer, Inc., for *Pennisetum macrophyllum atrosanguineum.*

nnual Exhibition, September 24-27. Henry A. Dreer, Inc., for *Asparagus myriocladus.*

hrysanthemum Show, November 5-8. Mrs. John L. Gardner, for *Solandra lævis.*

ARTHUR H. FEWKES,
JAMES WHEELER,
DAVID F. ROY,
ROBERT CAMERON,
ROBERT M. GREY.

Committee on Plants.

REPORT

OF THE

COMMITTEE ON FLOWERS

FOR THE YEAR 1903.

By KENNETH FINLAYSON, CHAIRMAN to August 8, and JULIUS HEURLIN, CHAIRMAN from August 9 to December 31.[1]

MR. FINLAYSON'S REPORT.

Your committee desires to report that although the past season has been unusually dry and somewhat warm in the early part of the summer, followed by unseasonable, cold, and rainy weather, yet, on the whole, commendable effort and enthusiasm have been displayed at the various exhibitions in friendly rivalry in the prize arena.

This in a measure offset the bad effect of the weather and established conclusively the fact that the old spirit of healthy competition is still abroad in the community of floriculturists at least.

The exhibition most affected by the weather conditions was the Rose Show; practically none of the local rose growers participated in it. Had it not been for the large and meritorious display of Miss Sarah B. Fay of Woods Hole, the show, as far as roses were concerned, would have been practically nothing. The manager, M. H. Walsh, at this and the following Saturday exhibitions sustained his wonted reputation as an expert rosarian. At the June show, Miss Fay was awarded a Silver Medal for the new hybrid-perpetual rose, *Soleil d'Or*.

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[1] On account of ill-health Mr. Finlayson was obliged to resign the chairmanship of the committee on August 8 and was succeeded by Mr. Heurlin for the remainder of the year.

On Saturday, February 7, there were two fine, competitive exhibits of orchids entered for No. 11 of the Schedule, and calling for a display of named species and varieties filling not less than twenty bottles.

The first prize, a Silver Gilt Medal, went to Col. Charles Pfaff of South Framingham for an elegant display, splendidly staged, and showing the height of cultural skill; his *Lælia autumnalis* variety being marvellously well done, as well as the cattleyas, oncidiums, dendrobiums, and others.

The second prize, a Silver Medal, was won by J. E. Rothwell of Brookline for a grand collection, mostly consisting of varieties of cypripediums; out of eighty-seven bottles, sixty-one being of this genus. This large proportion of the lady's slipper flower in the display, though of unquestioned merit, militated against the otherwise fine stand.

There was one superb spike of *Phalænopsis grandiflora* in Mr. Rothwell's exhibit which was, doubtless, the best spike of this particular variety ever shown in Boston.

The Spring Exhibition, held March 18 to 22, was notable in some exhibits; particularly in cut orchids from Walter P. Winsor of Fairhaven, Peter Murray, gardener, and from Col. Charles Pfaff, George Melvin, gardener.

Mr. Winsor's exhibit was very comprehensive in species and varieties and was superbly staged. In the collection of one hundred bottles of assorted orchids, twenty-four distinct dendrobiums were noticeable. Mr. Winsor was awarded the first prize, the Silver Gilt Medal.

Not far behind in general merit was Col. Pfaff's exhibit, which was especially strong in lælias, cattleyas, dendrobiums, and other genera. Col. Pfaff received the second prize, the Silver Medal.

Another notable exhibit was that of assorted carnations by Peter Fisher, magnificently grown and staged, to which the honor of the Silver Gilt Medal was given for superior cultivation. All the classes of carnations were keenly competed for and were nearly all of superior quality, plainly indicating the popularity and esteem in which the carnation is held by all growers of cut flowers.

In the rose classes there was but slim competition which is regrettable, as there are few, if any, flowers better calculated to add dignity and splendor to an exhibition than roses when well grown. The few classes in which there was competition, however, were up to any former standard of excellence, reflecting great credit on their exhibitors. Violets, though not a numerous class, evinced praiseworthy rivalry amongst the violet growers, notwithstanding the unusual prevalence last winter of the violet disease.

The May Exhibition, May 9, was not up to the usual standard in the cut-flower classes. Narcissi were entirely wanting, and tulips and other flowers shown were very indifferent in quality, owing, doubtless, to the long spell of dry weather prevailing at the time as well as previous to that date.

The Rhododendron and Peony Shows in June were combined, the majority of the growers favoring such a change on account of the forwardness of the season. During May and the first part of June the weather was uncommonly dry and warm, advancing the flowering season, and was otherwise greatly against good quality of bloom, as evidenced in most of the exhibits. Peonies were fairly well represented in number and passable in quality considering the general drouth. The same statement may be made regarding the rhododendrons, which showed unmistakably the effect of the unfavorable weather, being considerably inferior in quality, on the whole, to those of former years. Notwithstanding these drawbacks, Walter Hunnewell made a very creditable and extensive show of hardy and tender varieties of rhododendrons filling two large tables.

Mrs. A. W. Blake of Brookline also made a good showing of rhododendrons, and others contributed to a more or less degree. In the peony classes exhibits were made by T. C. Thurlow, A. H. Fewkes, Geo. Hollis, and others prominently identified with the culture of this flower. The Blue Hill Nurseries exhibited a grand collection of perennial cut flowers embracing eighty-two varieties. A fine display of cut orchids of various kinds, cattleyas predominating, was staged by Mr. Newell, gardener to Jason S. Bailey.

At the Saturday show, July 11, there was quite an extensive display of very creditable material, though had it been held a week earlier, delphiniums and *Iris Kœmpferi* would doubtless have

been in better condition. The proprietor of the Blue Hill Nurseries made an excellent and extensive exhibition on this occasion, showing his usual good taste in staging the same. M. H. Walsh of Woods Hole showed two new hybrid, rambler roses, one of which, the Lady Gay, was very fine and was awarded a First Class Certificate. It is a very profuse flowerer, rose-pink in color, resembling the Crimson Rambler in habit of growth. The other, for which Honorable Mention was awarded, partook more of the Wichuraiana type in leafage and habit of growth. The single flowers grew in clusters and were of a deep rose color with a whitish center. It is called *La Fiamma*. In the class of named, hardy roses, of not less than twenty-five varieties, Miss Sarah B. Fay was again invincible, carrying all before her in the rose line.

Iris Kœmpferi was well represented, Mrs. J. L. Gardner carrying off the first honors in the iris classes, as well as in the delphinium section, in which she had also a very fine collection.

William Whitman was a close second in the delphinium classes with an almost equally fine collection. T. C. Thurlow and F. A. Blake also made a creditable showing of *Iris Kœmpferi*.

At the exhibition of Saturday, July 25, the Blue Hill Nurseries were again victorious in the general display for effect in a space of thirty or more square feet, filling two large tables with finely arranged and correctly named cut flowers. William Whitman came second with a very meritorious collection in great variety.

Miss Sarah B. Fay exhibited a wonderfully fine display of hybrid roses considering the late date. Hardy aquatics, for some reason or other, were not represented at this show as extensively as they should have been. Mrs. J. L. Gardner won the first prize with a fairly good collection.

At the Saturday exhibition, August 1, there was a fairly representative Saturday show, one of the chief features being a fine exhibit of seasonable orchids put up by Emil Johanssohn, gardener to J. E. Rothwell.

William Whitman staged a very extensive display of named, perennial phloxes in great variety and of good quality, reflecting credit upon Martin Sullivan, the gardener, for his painstaking enterprise in affixing the names as well as in the skill shown in producing such good trusses.

E. L. Lewis and A. F. Estabrook carried off first and second prizes in the order named for very good displays of sweet peas.

On Saturday, August 8, perennial phloxes were shown somewhat extensively and keen competition was evinced between the various contestants, of whom there were quite a number. The several lots being on an almost equal plane of merit made it rather difficult for the judges to place the awards. The results of their careful deliberation will be found in the list of prizes and gratuities following this report. In almost all the exhibits of phloxes were to be seen new varieties of great merit in reference to size of individual flower and fullness of truss.

Mr. Heurlin's Report.

During August and September, dahlias were shown in great profusion, the cactus type still being the leader in popular favor. That this class of flowers will continue in popularity no one who saw the various exhibits can doubt. Probably no finer and better finished flowers than those shown by Walter P. Winsor were ever seen before in the halls.

While gladioli were not shown in as great quantity as formerly, the quality left little to be desired. First Class Certificates were awarded August 15 to Arthur F. Estabrook for Princeps, a brilliant red flower measuring five and one-half inches across; on August 22 to James F. Harlow for Madame Emile Lemoine, a beautiful cream-colored variety, four and one-half inches across; and on August 29 to A. F. Schenkelberger for White Lady, a pure white flower, and, perhaps, the best of all.

Mention should be made of two collections of asters shown August 22 by Mrs. John L. Gardner and William Whitman. This not being a regular prize day for asters adequate rewards could not be given, which we regret, because we never saw a more extensive and varied display of this flower arranged with such taste. There was also exhibited on this date by T. C. Thurlow a collection of some sixty varieties of phloxes, including most of the later French introductions, which was awarded first prize and was a very creditable display.

Chrysanthemums were up to the Boston standard but the variety was not as good as could be wished. It was quite a relief to

look down on E. S. Converse's beautiful Pompons after having strained one's neck for some time in looking up to the giants with their several feet of stem. At future exhibitions, chrysanthemums on long stems should be staged on tables not more than two feet high to give best effect—if for no other reason.

For six introductions of the current year Miss E. Jackson Clark had the only entry taking first prize with these varieties: Cheltoni, Mrs. J. C. Neville, Tancrède de Bastet, W. Duckham, W. A. Etherington, and La Fusion. To the same exhibitor went the prize for "Best Seedling never disseminated" for a pure white variety incurved of the Merza type and of better substance.

It seems to be a fact that the limit in size of flower has been reached and a reaction is setting in towards the more delicate Anemone and Pompon types. A First Class Certificate was awarded to W. A. Manda for Dr. Englehardt, a useful, pink, commercial variety. Carnations were largely staged at this show and M. A. Patten's collection was especially good. Only one entry has been received for the Sears' Prizes, owing undoubtedly to the scale of points by which the aspirants must be judged.

A collection of cannas from R. & J. Farquhar & Co. was given a First Class Certificate. The exhibit consisted of Golden Queen, Golden Leopard, Bridesmaid, Comté le Sach, Hyde Park, and Meteor.

We would recommend the following changes in the Schedule of Prizes:

First: — That three prizes be given for collection of orchids, instead of two, as at present: a Silver Gilt, a Silver, and a Bronze Medal. There are many growers with limited facilities who would be glad to enter for a Bronze Medal not being in positions to compete with the larger growers, nor caring for a gratuity, even if of higher money value than the medal.

Second: — That prizes for marigolds, zinnias, sweet williams, canterbury bells, and "vases" be dropped and the money applied to peonies, hardy phloxes, delphiniums, and irises — German and Japanese mainly.

Third: —That at one exhibition three medals be offered as a first, second, and third prize, instead of money, for hardy, herbaceous flowers and grasses; no restriction to be made as to number of bottles entered.

Out of an appropriation of $1,875 your committee has expended in Prizes and Gratuities $1,325, four Silver Gilt Medals, four Silver Medals, ten First Class Certificates of Merit, and four Honorable Mentions, leaving an unexpended balance of $472.

The following awards have been made during the year:—

PRIZES AND GRATUITIES AWARDED FOR FLOWERS.

1903.

JANUARY 3.

Gratuity:—

Mrs. J. L. Gardner, *Primula Sinensis*, $1.

JANUARY 17.

Gratuity:—

G. McWilliam, Seedling Cypripediums, $4.

FEBRUARY 7.

VIOLETS.—Best collection of varieties, in bunches of fifty blooms each:
1st, N. F. Comley, $4; 3d, Col. C. Pfaff, $2.

Gratuity:—

J. L. Bird, *Acacia pubescens*, $1.

SPRING EXHIBITION.

MARCH 18, 19, 20, 21, 22.

TENDER ROSES IN VASES.—Twelve blooms of American Beauty:
1st, W. H. Elliott, $15; 2d, The Floral Exchange, $12.

Twenty-five blooms of Liberty:
1st, W. H. Elliott, $12.

Twenty-five blooms of any other variety:
1st, Waban Rose Conservatories, Golden Gate, $8; 2d, Waban Rose Conservatories, Ivory, $6.

CARNATIONS.—Vase of one hundred cut blooms, with foliage, not less than six varieties:
1st, M. A. Patten, $8.

Twenty-five blooms of any named Crimson variety:
1st, M. A. Patten, Gov. Roosevelt, $3; 2d, M. A. Patten, Harry Fenn, $2.
Twenty-five blooms of any named Dark Pink variety:
1st, M. A. Patten, Mrs. T. W. Lawson, $3; 2d, L. E. Small, Mrs. T. W. Lawson, $2.
Twenty-five blooms of any named Light Pink variety:
1st, A. Roper, Fair Maid, $3; 2d, M. A. Patten, Fair Maid, $2.
Twenty-five blooms of any named Scarlet variety:
1st, M. A. Patten, J. H. Manley, $3; 2d, L. E. Small, J. H. Manley, $2.
Twenty-five blooms of any named White variety:
1st, M. A. Patten, Gov. Wolcott, $3; 2d, H. A. Stevens Co., Gov. Wolcott, $2.
Twenty-five blooms of any named Yellow Variegated variety:
1st, M. A. Patten, Dorothy Whitney, $3.
Twenty-five blooms of any named White Variegated variety:
1st, M. A. Patten, Prosperity, $3; 2d. S. J. Reuter, Prosperity. $2.

PANSIES.—Forty-eight cut blooms, not less than twenty-four varieties:
1st, Mrs. E. M. Gill, $3.

VIOLETS.—Bunch of one hundred blooms of Lady Hume Campbell:
1st, H. F. Calder, $3; 2d, Col. C. Pfaff, $2.
Bunch of one hundred blooms of Marie Louise:
1st, N. F. Comley, $3.
Bunch of one hundred blooms of any other Double variety:
1st, N. F. Comley, Imperial, $3; 2d, N. F. Comley, Neapolitan, $2.
Bunch of one hundred blooms of any Single variety:
1st, N. F. Comley, Princess of Wales, $3; 2d, G. W. Ayer, Princess of Wales, $2.

Gratuities:—

The Floral Exchange, Vase of Rose, Queen of Edgely, $8.
M. A. Patten, Vase of Carnation, Mrs. M. A. Patten, $3.
Little South Floral Co., Vase of Carnation, The Queen, $3.
A. Roper, Vase of Carnation, Fair Maid, $3.
Mrs. E. M. Gill, Display of Cut Flowers, $5.

MAY 9.

TULIPS.—Forty-eight blooms, not less than twelve named varieties:
1st, W. Whitman, $4.

PANSIES.—Forty-eight blooms, not less than twenty-four varieties:
1st, J. B. Shurtleff, Jr., $3; 2d, Mrs. E. M. Gill, $2.

Gratuities:—

W. E. Coburn, Hardy Hybrid Primulas, $3.
W. E. Coburn, Pansies, $4.
Col. C. Pfaff, Pelargoniums, $2.
Mrs. E. M. Gill, Display of Cut Flowers, $2.

RHODODENDRON AND PÆONY EXHIBITIONS (combined.)

JUNE 5 AND 6. (*Changed from June 5, 6, and 7, and June 13*)

H. H. Hunnewell Fund.

RHODODENDRONS.—Twelve distinct varieties, of unquestioned hardiness, named:

1st, Mrs. A. W. Blake, $15.

Six distinct varieties of unquestioned hardiness, named:

1st, Mrs. J. L. Gardner, $6.

HARDY AZALEAS.—Fifteen varieties, any or all classes:

2d, T. C. Thurlow, $5.

Twelve varieties, one vase of each.

1st, Mrs. A. W. Blake, $4.

Six varieties, one vase of each:

1st, Mrs. J. L. Gardner, $3.

Society's Prizes.

GERMAN IRISES.—Thirty-six vases of three trusses each, not less than twelve varieties:

1st, Mrs. J. L. Gardner, $4.

HARDY PYRETHRUMS.—Display of thirty bottles, single and double, six or more varieties:

1st, A. McLaren, $6.

HARDY ORNAMENTAL TREES AND SHRUBS.—Display of not less than thirty species and varieties, named:

1st, Mrs. J. L. Gardner, $8.

VASE OF FLOWERS:

1st, Mrs. E. M. Gill, $3; 2d, Miss H. B. Winter, $2.

HERBACEOUS PÆONIES.—Collection of thirty or more named varieties, double:

1st, W. Whitman, $10; 2d, T. C. Thurlow, $8.

Collection of twelve or more named varieties, single:

1st, T. C. Thurlow, $4.

Vase of blooms on long stems, arranged for effect, in the Society's large China vases:

1st, Mrs. J. L. Gardner, $8; 2d, W. Whitman, $6; 3d, W. J. Clemson, $4.

Gratuities:—

W. Hunnewell, Rhododendrons, $30.

Mrs. A. W. Blake, " $5.

Mrs. J. L. Gardner, Roses and Rhododendrons, $8.

J. S. Bailey, Display of Orchids, $10.
A. H. Fewkes, Display of Pæonies, $5.
E. A. & W. K. Wood, Vase of Oriental Poppies, $2.
T. C. Thurlow, Vase of *Kalmia latifolia*, red variety, $2.
Blue Hill Nurseries, Herbaceous Perennials, $10.
Mrs. E. M. Gill, Cut Flowers, $3.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 16 AND 17. (*Changed from June 23 and 24.*)

Theodore Lyman Fund.

HARDY ROSES.— Twenty-four distinct named varieties, three of each variety:
1st, Miss S. B. Fay, $25; 2d, Miss S. B. Fay, $20.

Society's Prizes.

Sixteen named varieties, three of each variety:
1st, Miss S. B. Fay, $12.
Twelve named varieties, three of each variety:
1st, Miss S. B. Fay, $10.
Twenty-four named varieties, one of each:
1st, Miss S. B. Fay, $10.
Eighteen named varieties, one of each:
1st, Miss S. B. Fay, $8.
Twelve named varieties, one of each:
1st, Miss S. B. Fay, $6.
Twenty-four blooms of Mme. Gabriel Luizet:
1st, Miss S. B. Fay, $6; 2d, P. B. Bradley, $4.
Six blooms of any other variety:
1st, Miss S. B. Fay, Ulrich Brunner, $3; 2d, Miss S. B. Fay, Clio, $2
General Display.—One hundred bottles of Hardy Roses in the Society's racks:
1st, Miss S. B. Fay, $10; 2d, Mrs. E. M. Gill, $9.

BASKET OF ROSES.—Arranged for effect:
1st, Mrs. E. M. Gill, $5.

SWEET WILLIAMS.—Display of eighteen vases, three trusses each, not less than six varieties:
1st, W. Whitman, $3; 2d, W. E. Coburn, $2; 3d, W. Whitman, $1.

Gratuities:—

Miss S. B. Fay, Display of Roses, $50.
A. H. Fewkes, Display of New Pæonies, $2.
W. Whitman, Display of Sweet Williams and Foxgloves, $3.
Blue Hill Nurseries, Herbaceous Perennials, $5.
Mrs. E. M. Gill, Display of Cut Flowers, $3.
W. H. Heustis, Display of Shrubs, $3.

JULY 11.

HARDY ROSES.—Collection, named, not less than twenty-five varieties, filling fifty vases, one in each vase:
1st, Miss S. B. Fay, $12.

IRIS KÆMPFERI.—Fifteen varieties, three of each, in vases:
1st, Mrs. J. L. Gardner, $6; 2d, T. C. Thurlow, $4.

Six varieties, three of each, in vases:
1st, Mrs. J. L. Gardner, $3; 2d, F. A. Blake, $2.

CAMPANULA MEDIUM.—Collection, not less than fifteen bottles:
1st, W. Whitman, $5.

DELPHINIUMS.—Display, thirty vases of three spikes each:
1st, Mrs. J. L. Gardner, $8; 2d, W. Whitman, $6; 3d, F. A. Blake, $4.

HARDY HERBACEOUS FLOWERS AND GRASSES.—Thirty bottles:
1st, Blue Hill Nurseries, $6; 2d, Blue Hill Nurseries, $5.

VASE OF FLOWERS:
1st, Mrs. E. M. Gill, $4; 2d, Goodell Farm, $3.

Gratuities:—

Miss S. B. Fay, Display of Hardy Roses, $6.
Mrs. J. L. Gardner, *Iris Kæmpferi*, $2.
W. Whitman, Sweet Williams, $1.
Mrs. J. B. Lawrence, Cut Flowers, $2.
Mrs. E. M. Gill, " " $2.
W. Whitman, " " $1.

JULY 18.

VASE OF FLOWERS.—Best arranged:
1st, Mrs. E. M. Gill, $4; 2d, Mrs. W. Winter, $3.

Gratuities:—

Miss S. B. Fay, Display of Hardy Roses, $6.
G. Hollis, Display of Perennial Phloxes, $1.
W. E. Coburn, Hollyhocks, $2.
Blue Hill Nurseries, two large vases of Cut Flowers, $5.
Mrs. E. M. Gill, Display of Cut Flowers, $1.

JULY 25.

HARDY AQUATIC FLOWERS.—Collection, named:
1st, Mrs. J. L. Gardner, $8.

GENERAL DISPLAY.—Arranged for effect, in space of thirty or more square feet:
1st, Blue Hill Nurseries, $6; 2d, W. Whitman, $4.

Gratuities:—

M. H. Walsh, Display of Rose, Lady Gay, $2.
Miss S. B. Fay, Display of Hybrid Roses, $5.
G. Hollis, Perennial Phloxes, $2.
W. Whitman, Hollyhocks, $1.
Mrs. E. M. Gill, Cut Flowers, $3.

AUGUST 1.

SWEET PEAS.—Display of named varieties, filling thirty vases, arranged with their own foliage:
1st, E. L. Lewis, $6; 2d, A. F. Estabrook, $4.

VASE OF FLOWERS.—For table decoration:
1st, Mrs. E. M. Gill, $3; 2d, Mrs. W. Winter, $2.

Gratuities:—

W. Whitman, Sweet Peas, $2.
E. L. Lewis, " " $1.
A. F Estabrook, " " $1.
G. Hollis, Perennial Phloxes, $2.
W. Whitman, Perennial Phloxes and Dahlias, $4.
J. E. Rothwell, Display of Orchids, $7.
Mrs. J. B. Lawrence, Cut Flowers, $1.
J. Thorpe, Cut Flowers, $1.
Blue Hill Nurseries, large vases of Cut Flowers, $6.

AUGUST 8.

PERENNIAL PHLOXES.—Twelve named varieties:
1st, T. C. Thurlow, $5; 2d, G. Hollis, $4.

GENERAL DISPLAY.—Arranged for effect in a space of thirty or more square feet:
1st, Blue Hill Nurseries, $6; 2d, W. Whitman, $4.

Gratuities:—

W. Whitman, Display of Phloxes, $4.
T. C. Thurlow, Perennial Phloxes, $2.
Mrs. G. Duncan, " " $1.

A. McLaren, Seedling Phloxes, $1.
Mrs. E. M. Gill, Display of Cut Flowers, $3.
W. Whitman, Vase of Cut Flowers, $1.

AUGUST 15.

ANNUALS.—General display, named, not less than fifty varieties, filling not less than one hundred and fifty bottles:
1st, Mrs. J. L. Gardner, $8; 2d, E. S. Converse, $6

Gratuities:—

W. G. Winsor, Dahlias, $3.
Mrs. J. B. Lawrence, " $2.
C. Wellington, " $1.
O. B. Hadwen, Gladioli, $1.
Blue Hill Nurseries, Perennial Phloxes, $3.
J. B. Shurtleff, Jr., Marigolds, $1.
Blue Hill Nurseries, two large vases of Cut Flowers, $2.
Mrs. E. M. Gill, Display of Cut Flowers, $3.

AUGUST 22.

PERENNIAL PHLOXES.—General Display, in not less than thirty vases:
1st, T. C. Thurlow, $6; 2d, G. Hollis, $5; 3d, F. J. Rea, $3.

Gratuities:—

W. G. Winsor, Dahlias, $3.
R. P. Struthers, " $2.
J. S. Chase, " $1.
C. Wellington, " $1.
W. Whitman, Collection of Asters, $5.
Mrs. J. L. Gardner, Collection of Asters and Zinnias, $6.
C. S. Pratt, Gladioli, $2.
J. B. Shurtleff, Jr., Vase of Salpiglossis, $1.
Blue Hill Nurseries, Cut Flowers, $3.
Mrs. E. M. Gill, " " $2.

AUGUST 29.

Theodore Lyman Fund.

ASTERS.—Of all classes, fifty vases, not less than twelve varieties, three flowers in each vase:
1st, E. S. Converse, $6; 2d, Mrs. J. L. Gardner, $5.
HARDY HERBACEOUS FLOWERS AND GRASSES.—Thirty bottles:
1st, Blue Hill Nurseries, $6; 2d, Blue Hill Nurseries, $5.

Gratuities:—

W. G. Winsor, Dahlias, $3.
C. Wellington, " $2.
N. W. T. Knott, " $2.
Mrs. L. Towle, " $1.
C. S. Pratt, Gladioli, $3.
O. B. Hadwen, " $1.
J. B. Shurtleff, Jr., Cannas, $1.
Shady Hill Nursery Co., three Vases of Flowers, $1.
Blue Hill Nurseries, Cut Flowers, $1.
Mrs. E. M. Gill, " " $2.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS.

SEPTEMBER 24, 25, 26, 27. (*Postponed from September 10-13.*)

Theodore Lyman Fund.

GLADIOLI.—Display of named and unnamed varieties, filling one hundred vases, arranged for effect with any foliage:
1st, C. S. Pratt, $8; 2d, W. P. Lothrop, $6.

Society's Prizes.

DAHLIAS.—Show, eighteen blooms, named varieties:
1st, W. P. Lothrop, $4; 2d, W. C. Winter, $3.
Fancy, eighteen blooms, named varieties:
1st, W. C. Winter, $4; 2d, E. W. Ela, $3.
Cactus, twelve blooms, named varieties:
1st, J. K. Alexander, $4; 2d, E. W. Ela, $3.
Decorative, twelve blooms, named varieties:
1st, W. C. Winter, $3; 2d, W. G. Winsor, $2.
Show, six blooms, named varieties:
1st, W. C. Winter, $2; 2d, W. H. Symonds, $1.
Fancy, six blooms, named varieties:
1st, W. H. Symonds, $2; 2d, W. P. Lothrop, $1.
Best single bloom, of any class, introduction of 1901 or later:
1st, H. F. Burt, Master Carl, $1.
Pompon, twelve vases of three blooms each, named varieties:
1st, W. H. Symonds, $3; 2d, J. K. Alexander, $2.
Single, twelve vases of three blooms each, named varieties:
1st, E. W. Ela, $2; 2d, W. C. Winter, $1.

General Display, one hundred or more bottles, in the Society's racks, arranged for effect:
1st, W. C. Winter, $8; 2d, R. P. Struthers, $6; 3d, W. G. Winsor, $4.

MARIGOLDS.—Display of French and African, filling twenty-five vases:
1st, G. F. Fabyan, $3; 2d, Goodell Farm, $2.

DOUBLE ZINNIAS.—Fifty flowers, not less than twelve varieties:
1st, A. McLaren, $3; 2d, S. H. Symmes, $2.

HARDY HERBACEOUS FLOWERS AND GRASSES.—Thirty bottles:
1st, Blue Hill Nurseries, $6; 2d, Blue Hill Nurseries, $5.

VASE OF FLOWERS.—For table decoration:
1st, Mrs. E. M. Gill, $3; 2d, Miss H. B. Winter, $2.

Gratuities:—

J. E. Rothwell, Collection of Orchids, $5.
M. H. Walsh, Hybrid Tea Rose, Urania and Rambler Rose, Débutante, $5.
N. W. T. Knott, Display of Dahlias, $2.
Mrs. E. M. Gill, " " " $1.
Blue Hill Nurseries, Collection of Phloxes, $2.
F. J. Rea, " " " $1.
Carl Blomberg, Hardy Herbaceous Flowers, $3.
Blue Hill Nurseries, " " " $2.
Blue Hill Nurseries, seven large vases of Cut Flowers, $20.
Mrs. E. M. Gill, Display of Cut Flowers, $2.

CHRYSANTHEMUM SHOW.

NOVEMBER 5, 6, 7, 8.

Josiah Bradlee Fund.

CHRYSANTHEMUMS.—Twenty-five blooms, of twenty-five distinct varieties, named; a piece of plate or value in money:
1st, Miss E. J. Clark, $18; 2d, E. A. Clark, $12; 3d, E. S. Converse, $8.

Six vases, of six named varieties, ten blooms each:
1st, Miss E. J. Clark, $30.

Henry A. Gane Memorial Fund.

For the best six specimen blooms of Mrs. Jerome Jones or any of the sports thereof:
1st, Col. C. Pfaff, $3; 2d, T. Howden, $2.

Society's Prizes.

Twelve blooms, Incurved, named, in vases:
1st, E. S. Converse, $6.

Twelve blooms, Japanese, named, in vases:
1st, E. A. Clark, $8; 2d, Miss E. J. Clark, $5.
Twelve blooms, Japanese Incurved, named, in vases:
1st, P. W. Moen, $10; 2d, P. B. Robb, $6; 3d, E. A. Clark, $4.
Twelve blooms, Anemone, named, in vases:
1st, E. S. Converse, $6.
Six blooms, Japanese, named, in vases:
1st, P. W. Moen, $6; 2d, E. S. Converse, $4.
Six blooms, Japanese Incurved, named, in vases:
1st, P. W. Moen, $6; 2d, E. S. Converse, $4.
Six blooms, Reflexed, named, in vases:
1st, P. W. Moen, $6; 2d, T. Doliber, $4.
Six blooms, Anemone, named, in vases:
1st, E. S. Converse, $5.
Six best varieties, named, introductions of the current year:
1st, Miss E. J. Clark, $5.
Vase of ten blooms on long stems, Pink, named:
1st, C. D. Sias, Viviand Morel, $10; 2d, Miss E. J. Clark, Viviand Morel, $8
Vase of ten blooms on long stems, Red, named:
1st, E. A. Clark, John Shrimpton, $10; 2d, Miss E. J. Clark, John Shrimpton, $8; 3d, C. D. Sias, John Shrimpton, $6.
Vase of ten blooms on long stems, White, named:
1st, Mrs. R. C. Hooper, Timothy Eaton, $10; 2d, Miss E. J. Clark, Merza, $8, 3d, C. D. Sias, Merza, $6.
Vase of ten blooms on long stems, Yellow, named:
1st, T. Howden, Col. D. Appleton, $10; 2d, Mrs. R. C. Hooper, Col. D. Appleton, $8; 3d, E. A. Clark, Col. D. Appleton, $6.
Vase of ten blooms on long stems, any other color, named:
1st, H. Dumaresq, Lady Hanham, $10; 2d, Miss E. J. Clark, Kate Broomhead, $8; 3d, C. D. Sias, Kate Broomhead, $6.
Best Seedling, never disseminated, six blooms:
Miss E. J. Clark, $5.

Gratuities:—

T. Doliber, Display of Chrysanthemums, $20.
F. S. Moseley, " " " $10.
Mrs. E. M. Gill, " " " $8.
E. A. Clark, " " " $4.
Peter Fisher, Carnation, Nelson Fisher, $2.
A. Roper, Vase of Carnation, Fair Maid, $2.
M. A. Patten, Collection of Carnations, $10.
F. S. Moseley, Centrepiece of Carnations, $5.
Mrs. M. W. Peirce, Collection of Carnations, $3.

SOCIETY'S SILVER GILT MEDALS

February 7. Col. C. Pfaff, first prize for display of Orchids, named species and varieties, filling not less than twenty bottles.

Spring Exhibition, March 18–22. W. P. Winsor, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Peter Fisher, for Display of Superior Carnations.

Chrysanthemum Show, November 5–8. Col. C. Pfaff, first prize for Orchids, named species and varieties. filling not less than twenty bottles.

KELWAY SILVER GILT MEDAL.

Rhododendron and Pæony Exhibition, June 6 and 7. T. C. Thurlow, first prize for Collection of Herbaceous Pæonies, eighteen named varieties, single or double.

SOCIETY'S SILVER MEDALS.

February 7. J. E. Rothwell, second prize for Orchids, named species and varieties, filling not less than twenty bottles.

Spring Exhibition, March 18–22. Col. C. Pfaff, second prize for Orchids, named species and varieties, filling not less than twenty bottles.

Rose and Strawberry Exhibition, June 16 and 17. Miss S. B. Fay, for Rose, Soleil d' Or.

Chrysanthemum Show, November 5–8. E. S. Converse, for Collection of Pompon Chrysanthemums.

FIRST CLASS CERTIFICATES OF MERIT.

Rose and Strawberry Exhibition, June 16 and 17. Blue Hill Nurseries, for *Incarvillea Delavayi*.

July 11. M. H. Walsh, for new hybrid Rambler Rose, Lady Gay.

August 8. Blue Hill Nurseries, for new Phlox, Blue Hills.

August 15. A. F. Estabrook, for Gladiolus, Princeps.

August 22. J. F. Harlow, for Gladiolus, Madame Emile Lemoine.

August 29. A. F. Schenkelberger, for Gladiolus, White Lady.

Chrysanthemum Show, November 5–8. W. A. Manda, for Chrysanthemum, Dr. Englehardt.

John Breitmeyer's Sons, for Seedling Hybrid Tea Rose.

Peter Fisher, for Carnation, Mrs. M. A. Patten.

R. & J. Farquhar & Co., for Collection of New Cannas.

HONORABLE MENTION.

Spring Exhibition, March 18–22. G. E. Buxton, for Seedling Carnation, Marion Patten Buxton.

April 4. M. H. Walsh, for Seedling Rose, Urania.

July 11. M. H. Walsh, for Seedling Rose, La Fiamma.

Annual Exhibition of Plants and Flowers, September 24–27. J. W. Clark, for Seedling Gladiolus.

JULIUS HEURLIN,
KENNETH FINLAYSON,
MICHAEL H. NORTON,
WILLIAM NICHOLSON,
ELIJAH A. WOOD,
} *Committee on Flowers.*

REPORT

OF THE

COMMITTEE ON FRUITS

FOR THE YEAR 1903.

By E. W. WOOD. CHAIRMAN.

The weather conditions have been unfavorable for the growth of the fruits of New England the past season, apples suffering least, peaches, strawberries, and cherries most. The apple crop, considering it was the "off" year, was unusually abundant; the market has been fairly well supplied, and a larger quantity has been exported than on any previous odd calendar year.

Strawberries were in most places an exceptionally light crop. Late frosts destroyed the early bloom and severe drouth in May and early June, where there were no facilities for irrigation, unfavorably affected the later blossoms. A much smaller quantity of fruit was shown at the Strawberry Exhibition than usual, as a result of the smaller quantity grown and a heavy rain falling the afternoon before the show, making it difficult to obtain perfect specimens for exhibition. William H. Monroe from Beverly has shown each year for the past three years the week following the exhibition a large, handsome berry named Commonwealth. He has never been able to pick ripe fruit to show at the regular exhibition, which would seem to make it a desirable late variety.

All the varieties of fruit for which premiums were offered have been shown during the weekly exhibitions, though in smaller quantity than usual. The blossom buds on the peach trees were

nearly all killed during the winter, and a less quantity of fruit was shown than for several years past. Of cherries a single dish was the only representative of that fruit, the blossoms being killed by frost.

There was a full bloom on the pear trees but owing to cold, wet weather there was an imperfect set of fruit and not more than from one-half to two-thirds the usual crop. Some fine specimens were shown at the later exhibitions. The exhibitions show a continued decrease in varieties grown, especially by those who grow for market; some of the former old and well-known varieties have almost entirely disappeared from the exhibitions. No new fruits have been shown requiring special mention.

Mrs. A. E. Monblo of Malden has shown at several exhibitions a very handsome fruit under the name of India Raspberry, which has attracted much attention from visitors. Under her cultivation it has proved more productive and has sold readily in Boston market for more than double the price of strawberries in their season. She continued to pick the fruit from the last of July until the green fruit and blossoms were killed by frost. It is not a new fruit but is grown in different countries under different names. It is usually catalogued in the United States as the Strawberry Raspberry, though there seems to be little to ally it with the strawberry, as the plants grow in bush form three or four feet in height with remarkably handsome, glossy-green foliage, in form resembling that of the rose.

The appropriation for fruits was $1,275. The Committee has awarded in Prizes and Gratuities $964, one Silver and one Bronze Medal.

PRIZES AND GRATUITIES AWARDED FOR FRUITS.

1903.

SPRING EXHIBITION.

MARCH 18, 19, 20, 21, 22.

Gratuities:—

W. H. Spooner, Wagener Apples, $1.
Goodell Farm, Rhode Island Greening Apples, $1.
M. W. Chadbourne, Collection of Apples, $2.

RHODODENDRON AND PÆONY EXHIBITIONS (combined.)

JUNE 6 AND 7. (*Changed from June 5, 6, and 7, and June 13.*)

Gratuity:—

W. Heustis & Son, Marshall Strawberries, $2.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 16 AND 17. (*Changed from June 23 and 24.*)

Theodore Lyman Fund.

STRAWBERRIES.—Four quarts of any variety:

1st, G. V. Fletcher, Marshall, the Lyman Plate, value $15; 2d, W. J. Clemson, Marshall, the Lyman Plate, value $12; 3d, W. Heustis & Son, Belmont, the Lyman Plate, value $10; 4th, G. F. Wheeler, Minute Man, the Lyman Plate, value $8.

Regular Prizes.

For the largest and best collection, not less than fifteen baskets of two quarts each, and not less than five varieties:

2d, G. F. Wheeler, $10.

Ten baskets, not less than three varieties, two quarts each:

1st, G. V. Fletcher, $10; 2d, I. E. Coburn, $8.

Five baskets of one variety, two quarts each:

1st, G. V. Fletcher, Marshall, $6; 2d, G. F. Wheeler, Minute Man, $5; 3d, G. F. Wheeler, Sample, $4.

Two quarts of Belmont:

1st, I. E. Coburn, $3.

Brandywine:

1st, E. S. Converse, $3.

Bubach:

1st, G. V. Fletcher, $3; 2d, I. E. Coburn, $2.

Clyde:

3d, G. F. Wheeler, $1.

Haverland:

1st, I. E. Coburn, $3.

Jessie:

1st, I. E. Coburn, $3.

Marshall:

1st, G. V. Fletcher, $3; 2d, P. B. Bradley, $2.

Miner's Prolific:
2d, G. F. Wheeler, $2.
Nick Ohmer:
1st, W. Heustis & Son, $3; 2d, E. S. Converse, $2; 3d, I. E. Coburn, $1.
Sample:
1st, E. S. Converse, $3; 2d, W. Heustis & Son, $2; 3d, I. E. Coburn, $1.
Any other variety:
1st, B. M. Smith, Salem, $3; 2d, I. E. Coburn, New York, $2; 3d, L. C. Weathers, Weathers, $1.
One quart of any new variety not previously exhibited:
1st, B. M. Smith, Governor Rollins, $3.

FOREIGN GRAPES.—Two bunches of any variety:
1st, Mrs. R. M. Clark, $5; 2d, E. S. Converse, $3.

Gratuity:—

P. B. Bradley, Nectarines, $2.

JULY 11.

STRAWBERRIES.—Two quarts of any variety:
1st, W. H. Monroe, Commonwealth, $3; 2d, W. Heustis & Son, Belmont, $2.

Gratuities:—

Miss Vera Chapell, Cherries, $1.
W. J. Clemson, Currants, $1.
W. J. Clemson, Gooseberries, $1.
Mrs. E. J. Cutter, Raspberries, $1.

JULY 18.

RASPBERRIES.—Two quarts of any variety:
1st, Mrs. E. J. Cutter, Cuthbert, $3.

BLACKCAPS.—Two quarts of any variety:
1st, E. S. Converse, $2.

CURRANTS.—Two quarts of any Red variety:
1st, E. S. Converse, $3; 2d, Mrs. E. M. Gill, $2; 3d, W. J. Clemson, $1.
Two quarts of any White variety:
1st, J. S. Chase, $3.

GOOSEBERRIES.—Two quarts of any variety of American origin:
1st, J. S. Chase, Triumph, $3; 2d, W. G. Kendall, Columbus, $2; 3d, W. G. Kendall, Chatauqua, $1.

JULY 25.

RASPBERRIES.—Two quarts of any variety:
1st, Mrs. E. J. Cutter, $3.
CURRANTS.—Two quarts of any Red variety:
2d, Mrs. E. M. Gill, $2.
GOOSEBERRIES. — Two quarts of any Foreign variety.
1st, J. S. Chase, Whitesmith, $3; 2d, W. G. Kendall, Industry, $2.

Gratuity:—

E. S. Converse, Collection of Foreign Grapes, $3.

AUGUST 1.

APPLES.—Yellow Transparent:
1st, E. S. Converse, $3; 2d, J. S. Chase, $2; 3d, G. L. Brown, $1.
PEARS.—Summer Doyenne:
1st, E. S. Converse, $3; 2d, W. Fenno, $2.

Gratuity:—

W. J. Clemson, Blackberries, $1.

AUGUST 8.

APPLES.—Red Astrachan:
1st, W. Fenno, $3; 2d, Dr. E. A. Mayell, $2; 3d, W. J. Clemson, $1.
Sweet Bough:
1st, Mrs. A. E. Underwood, $3; 2d, F. W. Damon, $2; 3d, W. Heustis & Son, $1.
Any other variety:
1st, G. V. Fletcher, Williams, $3; 2d, J. C. Stone, Williams, $2; 3d, M. W. Chadbourne, Williams, $1.
PEARS.—Giffard:
1st, W. Fenno, $3; 2d, F. W. Damon, $2; 3d, J. L. Bird, $1.
Any other variety:
1st, E. S. Converse, Bloodgood, $3; 2d, G. V. Fletcher, Clapp's Favorite $2; 3d, W. Fenno, Osband's Summer, $1.
BLACKBERRIES.—Two quarts of any variety:
1st, M. W. Chadbourne, $3; 2d, W. J. Clemson, $2; 3d, A. Low, $1.
PEACHES.—Open culture, any variety:
1st, D. L. Fiske, $3.

Gratuity:—

D. L. Fiske, Plums, $1.

AUGUST 15.

APPLES.— Oldenburg:
1st, J. L. Bird, $3; 2d, A. Low, $2.
Any other variety:
1st, M. W. Chadbourne, Williams, $3; 2d, J. C. Stone, Williams, $2; 3d, G. V. Fletcher, Williams, $1.
PEARS.—Clapp's Favorite:
1st, F. W. Damon, $3; 2d, E. Torrey, $2; 3d, W. Heustis & Son, $1.
Any other variety:
1st, W. Fenno, Giffard, $3; 2d, F. W. Damon, Giffard, $2.
PEACHES.—Twelve specimens, of outdoor culture, of any variety:
1st, D. L. Fiske, $3; 2d, A. Low, $2.
Six specimens of cold house or pot culture, of any variety:
1st, Mrs. J. C. Whitin, Crimson Garland, $3; 2d, E. S. Converse, Noblesse, $2.
BLACKBERRIES.—Two quarts of any variety:
1st, M. W. Chadbourne, $3; 2d, A. Low, $2.
PLUMS.—Japanese, any variety:
1st, D. L. Fiske, Abundance, $3; 2d, G. D. Monroe, Burbank, $2
NECTARINES.—Orchard house culture, twelve specimens:
1st, Mrs. J. C. Whitin, Pine Apple, $4.
FOREIGN GRAPES.—Two bunches of any variety:
1st, Mrs. J. C. Whitin, Golden Queen, $4.

AUGUST 22.

APPLES.—Chenango:
1st, E. E. Cole, $3; 2d, G. L. Brown, $2.
Summer Pippin:
1st, W. Fenno, $3.
Williams:
1st, V. Frost, $3; 2d, J. C. Stone, $2; 3d, G. V. Fletcher, $1.
Any other variety:
1st, W. Heustis & Son, Gravenstein, $3; 2d, W. Fenno, Sops of Wine, $2; 3d, M. W. Chadbourne, Porter, $1.
PEARS.—Rostiezer:
1st, E. S. Converse, $3.
Tyson:
1st, C. F. Curtis, $3; 2d, A. T. Brown, $2; 3d, J. L. Bird, $1.
Any other variety:
1st, F. W. Damon, Clapp's Favorite, $3; 2d, A. T. Brown, Bartlett, $2; 3d, E. S. Converse, Clapp's Favorite, $1.
PEACHES.—Any variety:
1st, F. H. Evans, Carman, $3; 2d, D. L. Fiske, Mamie Ross, $2; 3d, D. L. Fiske, Coolidge's Favorite, $1.

PLUMS, JAPANESE.—Abundance:
2d, D. L. Fiske, $2.
Burbank:
1st, G. D. Moore, $3; 2d, D. L. Fiske, $2.
Any other variety:
1st, F. W. Damon, Bradshaw, $3; 2d, G. V. Fletcher, Bradshaw, $2; 3d, D. L. Fiske, White Kelsey, $1.

AUGUST 29.

APPLES.—Foundling:
2d, C. M. Handley, $2.
Gravenstein:
1st, W. Heustis & Son, $3; 2d, G. D. Moore, $2.
Porter:
1st, C. M. Handley, $3; 2d, W. Heustis & Son, $2; 3d, G. V. Fletcher, $1.
Any other variety:
1st, E. E. Cole, Alexander, $3; 2d, E. E. Cole, Chenango, $2; 3d, W. Fenno, Summer Pippin, $1.
PEARS.—Bartlett:
1st, W. Milman, $3; 2d, V. Frost, $2; 3d, S. S. Symmes, $1.
Any other variety:
1st, W. Fenno, Flemish Beauty, $3; 2d, M. W. Chadbourne, Flemish Beauty, $2; 3d, M. W. Chadbourne, Boussock, $1.
PEACHES.—Single dish, of any variety:
1st, F. H. Evans, Carman, $3; 2d, D. L. Fiske, Champion, $2.
PLUMS.—Any variety:
1st, E. L. Lewis, White Kelsey, $3; 2d, S. S. Symmes, Burbank, $2; 3d, G. D. Moore, Burbank, $1.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS AND OCTOBER EXHIBITION OF FRUITS AND VEGETABLES (combined.)

SEPTEMBER 24, 25, 26, 27. (*Changed from September 10–13 and October 3.*)

Theodore Lyman Fund.

For the heaviest and best ripened bunch of any Foreign Black Grape, not less than six pounds:
1st, Miss E. J. Clark, a Silver Medal; 2d, Miss E. J. Clark, a Bronze Medal.

Society's Prizes.

APPLES.—Fall Orange or Holden:
1st, W. A. Green, $3; 2d, C. M. Handley, $2.
Foundling:
2d, C. M. Handley, $2.
Garden Royal:
2d, C. B. Travis, $2.
Gravenstein:
1st, Mrs. A. E Underwood, $3; 2d, W. Heustis & Son, $2; 3d, J. B. Shurtleff, Jr., $1.
Hubbardston:
1st, C. C. Shaw, $3; 2d, M. W. Chadbourne, $2; 3d, C. M. Handley, $1.
Mackintosh:
1st, F. J. Kinney, $3; 2d, C. C. Shaw, $2: 3d, G. V. Fletcher, $1.
Maiden's Blush:
1st, W. Fenno, $3; 2d, H. W. Anderson, $2.
Mother:
1st, C. C. Shaw, $3.
Porter:
1st, Mrs. A. E. Underwood, $3; 2d, W. Heustis & Son, $2; 3d, C. M. Handley, $1.
Red Bietigheimer:
2d, M. Sullivan, $2.
Sutton:
1st, A. E. Hartshorn, $3.
Washington Strawberry:
1st, F. J. Kinney, $3; 2d, A. E. Hartshorn, $2; 3d, W. Fenno, $1.
Wealthy:
1st, J. S. Hodge, $3; 2d, H. W. Anderson, $2; 3d, C. M. Handley, $1.
Any other variety:
1st, E. E. Cole, Alexander, $3; 2d, W. A. Green, 20 Oz., $2; 3d, A. E. Hartshorn, Rhode Island Greening, $1.
CRAB APPLES.—Transcendent, twenty-four specimens:
1st, Miss L. F. Wiggin, $2.
Any other variety:
1st, W. H. Teele, Hyslop, $2; 2d, A. E. Hartshorn, Hyslop, $1.
PEARS.—Bartlett:
1st, V. Frost, $3; 2d, G. V. Fletcher, $2; 3d, J. B. Shurtleff, Jr., $1.
Hardy:
1st, A. K. Gould, $3; 2d, C. F. Curtis, $2; 3d, Mrs. E. M. Gill, $1.
Paradise of Autumn:
1st, W. Milman, $3; 2d, W. Heustis & Son, $2; 3d, W. Fenno, $1.
Souvenir du Congrès:
1st, W. Fenno, $3; 2d, C. F. Curtis, $2.

Any other variety:
1st, C. W. Libby, Flemish Beauty, $3; 2d, W Fenno, Flemish Beauty, $2; 3d, C. F. Curtis, Boussock, $1

PEACHES.—Crosby:
2d, A. Low, $2.
Oldmixon Freestone:
1st, D. L. Fiske, $3.
Stump the World:
2d, D. L. Fiske, $2.
Any other variety:
1st, D. L. Fiske, $3.

PLUMS.—Imperial Gage:
1st, E. S. Converse, $3; 2d, J. B. Shurtleff, Jr., $2.
Lombard:
1st, G. V. Fletcher, $3.
Any other variety:
1st, G. V. Fletcher, Bradshaw, $3.

FOREIGN GRAPES.—Two bunches of Black Alicante:
1st, Miss E. J. Clark, $5.
Lady Downs:
1st, Miss E. J. Clark, $5.
Muscat of Alexandria:
1st, Miss E. J. Clark, $5.
Any other variety:
1st, Miss E. J. Clark, $5; 2d, Miss E. J. Clark, $4; 3d, Miss E. J. Clark, $3.

NATIVE GRAPES.—Six bunches of Campbell's Early:
1st, L. Darling, $3.
Moore's Early:
1st, F. W. Damon, $3.
Any other variety:
1st, C. W. Libby, Diamond, $3; 2d, F. W. Damon, Concord, $2; 3d, C. W. Libby, Hartford Prolific, $1.

Samuel Appleton Fund

APPLES.—Baldwin:
1st, E. E. Cole, $3; 2d, G. V. Fletcher, $2; 3d, A. E. Hartshorn, $1.
Hubbardston:
1st, C. C. Shaw, $3; 2d, M. W. Chadbourne, $2.

PEARS.—Bosc:
1st, W. Wheeler, $3; 2d, F. E. Coolidge, $2; 3d, C. F. Curtis, $1.
Sheldon:
1st, F. E. Coolidge, $3; 2d, S. S Symmes, $2; 3d, A. T. Brown, $1.

Benjamin V. French Fund.

APPLES.—Gravenstein:
1st, W. Heustis & Son, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, W. A. Green, $1.
Rhode Island Greening:
1st, A. E. Hartshorn, $3; 2d, G. V. Fletcher, $2; 3d, C. C. Shaw, $1.

Marshall P. Wilder Fund.

PEARS.—Anjou:
1st, A. T. Brown, $3; 2d, W. Milman, $2; 3d, G. V. Fletcher, $1.
Bartlett:
1st, W. H. Derby, $3; 2d, G. V. Fletcher, $2; 3d, W. A. Green, $1.
GRAPES.—Concord, twelve bunches:
1st, G. V. Fletcher, $3; 2d, J. S. Chase, $2.
Worden:
1st, J. S. Chase, $3.

Theodore Lyman Fund.

APPLES.—Fall Orange or Holden:
1st, W. A. Green, $3; 2d, C. M. Handley, $2.
Fletcher Russet:
1st, G. V. Fletcher, $3; 2d, E. R. Teele, $2; 3d, C. F. Curtis, $1.
Maiden's Blush:
1st, W. Fenno, $3; 2d, H. R. Kinney, $2; 3d, W. C. Winter, $1.
Mother:
1st, H. R. Kinney, $3; 3d, W. C. Winter, $1.
Porter:
1st, C. M. Handley, $3; 2d, W. Heustis & Son, $2; 3d, J. C. Stone, $1.
Pound Sweet:
1st, G. V. Fletcher, $3; 2d, G. D. Clapp, $2.
Sutton:
1st, E. M. Bruce, $3; 2d, A. E. Hartshorn, $2.
Palmer or Washington Royal:
2d, A. E. Hartshorn, $2.
Wealthy:
1st, H. W. Anderson, $3; 2d, M. Sullivan, $2; 3d, C. M. Handley, $1.
Any other variety:
1st, A. E. Hartshorn, Washington Strawberry, $3; 2d, W. A. Green, 20 Oz., $2; 3d, M. Martin, Reliance, $1.

Regular Prizes.

PEARS.—Angouleme:
1st, W. H. Derby, $3; 2d, C. F. Curtis, $2; 3d, A. T. Brown, $1.
Clairgeau:
1st, F. W. Damon, $3; 2d, C. F. Curtis, $2; 3d, J. S. Chase, $1.

Comice:
1st, J L. Bird, $3; 2d, A. T. Brown, $2; 3d, F. W. Damon, $1.
Dana's Hovey:
1st, F. W. Damon, $3; 2d, G. V. Fletcher, $2; 3d, A. T. Brown, $1.
Diel:
1st, A. T. Brown, $3; 2d, G. F. Pierce, $2; 3d, F. W. Damon, $1.
Fulton:
1st, E. S. Converse, $3; 2d, J. L. Bird, $2.
Hardy:
1st, C. F. Curtis, $3; 2d, W. Fenno, $2; 3d, E. S. Converse, $1.
Howell:
1st, W. Fenno, $3.
Josephine of Malines:
1st, J. L. Bird, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, W. Fenno, $1.
Lawrence:
1st, Mrs. C. D. Hodges, $3; 2d, A. T. Brown, $2; 3d, W. Fenno, $1.
Louise Bonne of Jersey:
1st, A. T. Brown, $3; 2d, Mrs. C. Whittier, $2; 3d, C. F. Curtis, $1.
Marie Louise:
1st, E. Torrey, $3; 2d, A. T. Brown, $2; 3d, C. E. Swain, $1.
Merriam:
1st, C. F. Curtis, $3; 2d, F. W. Damon, $2; 3d, J. L. Bird, $1.
Onondaga:
1st, J. L. Bird, $3; 2d, W. Fenno, $2; 3d, C. B. Travis, $1.
Seckel:
1st, W. Milman, $3; 2d, S. S. Symmes, $2; 3d, G. V. Fletcher, $1.
Superfin:
1st, F. W. Damon, $3; 2d, E. B. Wilder, $2; 3d, J. L. Bird, $1.
Urbaniste:
1st, J. L. Bird, $3; 2d, E. S. Converse, $2; 3d, A. T. Brown, $1.
Any other variety:
1st, J. C. Stone, Flemish Beauty, $3; 2d, C. E. Swain, Boussock, $2; 3d, M. W. Chadbourne, Langelier, $1.

QUINCES.—Any variety:
1st, G. V. Fletcher, Rea, $3; 2d, G. V. Fletcher, Orange, $2; 3d, J. S. Chase, $1.

PEACHES.—Crawford's Late:
1st, W. J. Clemson, $3.
Any other variety:
1st, D L. Fiske, Elberta, $3.

PLUMS.—Yellow Egg:
1st, G. V. Fletcher, $2.
Any other variety:
1st, J. B. Shurtleff, Jr., $2.

NATIVE GRAPES.—Six bunches of Brighton:
3d, C. W. Libby, $1.

Delaware:
1st, J. S. Chase, $3; 2d, C. W. Libby, $2; 3d, W. J. Clemson, $1.
Herbert:
1st, C. W. Libby, $3.
Niagara:
1st, C. W. Libby, $3; 2d, W. J. Clemson, $2; 3d, J. S. Chase, $1.
Pocklington:
1st, C. W. Libby, $3; 2d, F. W. Damon, $2.
Any other variety:
1st, C. W. Libby, $3.

CRANBERRIES.—Half-peck:
1st, S. P. Chase, $3.

Gratuities:—

J. L. Bird, Collection of Pears, $3.
E. B. Wilder, " " " $3.
M. W. Chadbourne, " " " $1.
Goodell Farm, Collection of Apples, $1.
Mrs. A. E. Monblo, India Raspberry, $2.

CHRYSANTHEMUM SHOW.

NOVEMBER 5, 6, 7, 8.

Benjamin V. French Fund.

APPLES.—Baldwin:
1st, J. C. Stone, $3; 2d, C. C. Shaw, $2; 3d, C. F. Boyden, $1.
Rhode Island Greening:
1st, Mrs. A. E. Underwood, $3; 2d, A. E. Hartshorn, $2; 3d, E. M. Bruce, $1.

Society's Prizes.

APPLES.—Danvers Sweet:
1st, W. Fenno, $3.
Fameuse:
1st, E. E. Cole, $3; 2d, E. M. Bruce, $2.
Fletcher Russet:
1st, G. V. Fletcher, $3; 2d, C. F. Curtis, $2; 3d, C. M. Handley, $1.
Hubbardston:
1st, C. C. Shaw, $3; 2d, Mrs. F. B. Davidson, $2; 3d, W. Fenno, $1.
Hunt Russet:
1st, C. F. Boyden, $3.

Jacob's Sweet:
1st, M. Martin, $3.
Lady's Sweet:
1st, E. E. Cole, $3; 2d, C. C. Shaw, $2.
Mackintosh:
1st, J. F. Stott, $3; 2d, E. M. Bruce, $2; 3d, G. V. Fletcher, $1.
Northern Spy:
1st, E. M. Bruce, $3; 2d, S. R. Smith, $2; 3d, G. V. Fletcher, $1.
Roxbury Russett:
1st, C. F. Boyden, $3; 2d, A. E. Hartshorn, $2; 3d, E. E. Cole, $1.
Tolman's Sweet:
1st, E. E. Cole, $3; 2d, G. V. Fletcher, $2; 3d, Mrs. A. E. Underwood, $1.
Tompkins King:
1st, E. M. Bruce, $3.
Any other variety:
1st, J. Parker, Bellflower, $3; 2d, W. A. Green, 20 Oz., $2; 3d, E. M. Bruce, Sutton Beauty, $1.

PEARS.—Angouleme:
1st, E. Torrey, $3; 2d, W. H. Derby, $2; 3d, F. W. Damon, $1.
Anjou:
1st, W. Milman, $3; 2d, F. W. Damon, $2; 3d, Miss M. B. Mendum, $1.
Bosc:
1st, G. V. Fletcher, $3; 2d, A. K. Gould, $2; 3d, C. E. Swain, $1.
Clairgeau:
1st, W. J. Wheeler, $3; 2d, F. W. Damon, $2; 3d, C. F. Curtis, $1.
Comice:
1st, J. L. Bird, $3; 2d, A. T. Brown, $2; 3d, W. Fenno, $1.
Dana's Hovey:
1st, W. G. Kendall, $3; 2d, F. W. Damon, $2; 3d, G. V. Fletcher, $1.
Diel:
1st, A. K. Gould, $3; 2d, F. W. Damon, $2; 3d, A. T. Brown, $1.
Josephine of Malines:
1st, W. Fenno, $3; 2d, J. L. Bird, $2.
Lawrence:
1st, W. Fenno, $3; 2d, F. W. Damon, $2; 3d, W. A. Green, $1.
Vicar:
1st, E. S. Converse, $3; 2d, A. T. Brown, $2; 3d, J. L. Bird, $1.
Any other variety:
1st, E. A. Hall, Glout Morceau, $3; 2d, W. Milman, Mt. Vernon, $2; 3d, F. W. Damon, Seckel, $1.

QUINCES.—Any variety:
1st, G. V. Fletcher, Champion, $3; 2d, G. V. Fletcher, Orange, $2; 3d, J. S. Chase, Champion, $1.

Gratuities:—

W. Fenno, Collection of Apples and Pears, $2.
M. W Chadbourne, " " " " " $1.
C. P. Trowbridge, Cranberries, $1.
C. P. Trowbridge, " $1.
H. F. Gowell, " $1.

E. W. Wood,
Charles F. Curtis,
Warren Fenno,
J. Willard Hill,
George F. Pierce,
John L. Bird,
Frederick W. Damon.

Committee on Fruits.

REPORT

OF THE

COMMITTEE ON VEGETABLES

FOR THE YEAR 1903.

By WARREN HOWARD HEUSTIS, CHAIRMAN.

Your committee has to report that the exhibitions of the past year have been very well sustained and well up to the usual high standard of this Society. While occasionally we have new varieties of vegetables it is quite hard to improve on existing sorts.

At the winter shows the lettuce was remarkably heavy and reminded us of that grown in summer in the open, which indicates that the greenhouse business is each year getting nearer perfection.

At the Spring Exhibition there was a very large and instructive exhibition of seedling potatoes by Hon. Aaron Low of Hingham, which attracted much attention from visitors. It consisted of from fifty to seventy-five varieties from one to five years from the seed ball to maturity. It takes from three to five years of cultivation to determine the value of varieties from the seed, as many of them are not worthy of retaining. Quite a number of the varieties which have been tested for five years promise to be of superior value in productiveness and quality. The varieties one year from the seed ball showed much difference in form and color. Among the more mature kinds the following named varieties are promising: Plymouth Rock, Farmers' Pride, Belle of Hingham, Snowball, Low's Triumph, Bay State, and Wenham Beauty. Also quite a number designated by numbers are highly promising.

The season was rather earlier this year than common and very fine, wrinkled peas were shown quite early in June. The cool summer was unfavorable for melon culture and the quality of this vegetable was not as good as usual; only some of the salmon-fleshed varieties were up to the mark. We would except some forced under glass and shown July 25, which were fine. The weather conditions must be right to have good melons and, in fact, this is true with all classes of vegetables. The exhibitions scheduled for September 10–13 and October 3 were held together on September 24–27 and were a credit to any society.

The celery, cauliflower, endive, potatoes and tomatoes were all worthy of special mention; and we are reminded in this connection that the gardeners in the vicinity of Boston seem to be losing their once firm hold on the celery prizes, as most of them are going to Bristol County. However we must keep trying.

We had several very interesting and instructive exhibits of Chinese vegetables which were prepared and staged in an attractive manner.

There have been expended during the year for prizes and gratuities $877.00, leaving an unexpended balance of $23.00, out of which a Silver Medal and a Bronze Medal are to be paid.

PRIZES AND GRATUITIES AWARDED FOR VEGETABLES.

1903.

JANUARY 3.

CELERY.—Four roots of any variety:

1st, W. Heustis & Son, Pascal, $3; 2d, W. Heustis & Son, Boston Market, $2; 3d, A. E. Hartshorn, Boston Market, $1.

LETTUCE.—Four heads of Tennisball:

1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2.

PARSLEY.—Two quarts:

1st, A. E. Hartshorn, $3; 2d, A. Nixon, $2.

Gratuities:—

H. R. Kinney, Mushrooms, $2.
A. E. Hartshorn, Collection, $3.
W. Heustis & Son, " $1.

FEBRUARY 7.

RADISHES.—Four bunches of any variety:
1st, A. E. Hartshorn, $3; 2d, H. R. Kinney, $2; 3d, W. W. Rawson, $1.
CELERY.—Four roots:
1st, W. Heustis & Son, $3; 2d, H. R. Kinney, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Fours heads of Tennisball:
1st, W. W. Rawson, $3; 2d, H. R. Kinney, $2; 3d, G. D. Moore, $1.
MUSHROOMS.—Twenty-four specimens:
1st, H. R. Kinney, $3; 2d, I. E. Coburn, $2; 3d, W. C. Winter, $1.

Gratuities:—

A. E. Hartshorn, Collection, $2.
W. Heustis & Son, " $2.

SPRING EXHIBITION.

MARCH 18, 19, 20, 21, 22.

William J. Walker Fund.

RADISHES.—Four bunches of Turnip Rooted:
1st, W. W. Rawson, $2; 2d, A. E. Hartshorn, $1.
CUCUMBERS.—Pair of White Spine:
1st, W. W. Rawson, $3.
DANDELIONS.—Peck:
1st, A. E. Hartshorn, $3.
LETTUCE.—Four heads:
1st, W. W. Rawson, $3; 2d, G. D. Moore, $2; 3d, A. E. Hartshorn, $1.
TOMATOES.—Twelve specimens:
1st, W. J. Clemson, Best of All, $3; 2d, W. J. Clemson, Freedom, $2.

Gratuities:—

A. Low, Seedling Potatoes, $7.
M. W. Chadbourne, Artichokes, $1.
W. Heustis & Son, Collection, $2.
A. E. Hartshorn, " $1

APRIL 4.

Gratuity: —

A. Low, Spinach, $1.

MAY 9.

William J. Walker Fund.

ASPARAGUS. — Four bunches, twelve stalks each:
1st, E. Parker, $3; 2d, W. H. Hunt, $2; 3d, A. E. Hartshorn, $1.
CUCUMBERS.—Pair of White Spine:
1st, E. M. Bruce, $3; 2d, G. D. Moore, $2.
Pair of any other variety:
1st, E. M. Bruce, English Frame, $3; 2d, E. M. Bruce, Proctor's Model, $2.
SPINACH.—Peck:
1st, A. Low, Round Leaf, $3; 2d, A. Low, Victoria, $2; 3d, G. D. Moore, $1.
DANDELIONS.—Peck:
1st, A. E. Hartshorn, $3; 2d, J. C. Stone, $2; 3d, W. Heustis & Son, $1.
RHUBARB.—Twelve stalks, open culture:
1st, E. Parker, $3; 2d, W. Heustis & Son, $2; 3d, W. J. Clemson, $1.

Gratuities: —

W. Heustis & Son, Collection, $4.
G. D. Moore, " $2.
A. Low, " $1.
A. E. Hartshorn, " $1.

RHODODENDRON AND PÆONY EXHIBITION (*combined*).

JUNE 6, 7. (*Changed from June 5, 6, and 7, and June 13.*)

Theodore Lyman Fund.

BEETS.—Twelve specimens of any variety:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2.
RADISHES.—Four bunches:
1st, W. Heustis & Son, $2; 2d, E. L. Lewis, $1.
ASPARAGUS.—Four bunches, twelve stalks each:
1st, W. H. Hunt, $3; 2d, E. Parker, $2; 3d, A. E. Hartshorn, $1.

CUCUMBERS.—Pair:

1st, Geo. D. Moore, $3; 2d, J. C. Stone, $2; 3d, W. W. Rawson, $1.

LETTUCE.—Four heads:

1st, W. W. Rawson, $3; 2d, G. D. Moore, $2; 3d, E. L. Lewis, $1.

RHUBARB.—Twelve stalks, open culture.

1st, E. Parker, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.

MUSHROOMS.—Twenty-four specimens:

1st, W. C. Winter, $3.

Gratuities:—

G. D. Moore, Collection, $2.
A. E. Hartshorn, " $1.
W. Heustis & Son, " $1.

ROSE AND STRAWBERRY EXHIBITION.

JUNE 16, 17. (*Changed from June 23, 24.*)

BEETS.— Twelve Summer Turnip Rooted:

1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.

ONIONS.—Twelve specimens:

1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, W. J. Clemson, $1.

CUCUMBERS.—Pair of any variety:

1st. J. C. Stone, $3; 2d, G. D. Moore, $2; 3d, Mrs. R. M. Clark, $1.

LETTUCE.—Four heads of any variety:

1st, E. L. Lewis, Immensity, $3; 2d, E. L. Lewis, Deacon, $2; 3d, A. E. Hartshorn, Deacon, $1.

PEAS.—Half-peck of any variety:

1st, W. J. Clemson, Gradus, $3; 2d, P. B. Bradley, Gradus, $2; 3d, A. E. Hartshorn, Thomas Laxton, $1.

Gratuities:—

G. D. Moore, Collection, $2.
W. Heustis & Son, " $1.

JUNE 30.

Gratuity:—

W. Heustis & Son, Cabbage, $1.

JULY 11.

ONIONS.—Twelve specimens:
1st, E. L. Lewis, $2; 2d, G. D. Moore, $1.
SQUASHES.—Summer, four specimens:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, W. Heustis & Son, $1.
CABBAGES.— Three of any variety, trimmed:
1st, G. D. Moore, Early Summer, $3; 2d, W. Heustis & Son, Early Summer, $2; 3d, W. Heustis & Son, Early Spring, $1.
BEANS.—Half-peck of any variety:
1st, A. E. Hartshorn, $3; 2d, G. D. Moore, $2; 3d, J. C. Stone, $1.
PEAS.—Half peck of any variety:
1st, J. Thorpe, $3; 2d, E. L. Lewis, $2; 3d, F. Tetlow, $1.

Gratuities:—

A. E. Hartshorn, Tomatoes, $1.
G. D. Moore, Collection, $2.
W. Heustis & Son, " $1.
A. Low, " $1.
W. Whitman, " $1.

JULY 18.

Levi Whitcomb Fund.

POTATOES.—Twelve specimens:
1st, W. J. Clemson, Early Rose, $3; 2d, E. L. Lewis, Early Northern, $2; 3d, A. Low, Early Essex, $1.
CABBAGES.—Three Drumhead, trimmed:
1st, W. Heustis & Son, Early Summer, $3; 2d, W. Heustis & Son, All Seasons, $2; 3d, A. E. Hartshorn, $1.
LETTUCE.—Four heads, any variety:
1st, E. L. Lewis, Immensity, $3; 2d, E. L. Lewis, Defiance, $2; 3d, E. L. Lewis, Deacon, $1.
BEANS.—Half-peck of any variety:
1st, W. Whitman, $3; 2d, J. C. Stone, $2; 3d, A. E. Hartshorn, $1.
SQUASHES.—Summer, four specimens:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.

Gratuities:—

A. E. Hartshorn, Collection, $1.
A. Low, " $1.
J. C. Stone, " $1.
W. Heustis & Son, " $1.

JULY 25.

LETTUCE.—Four heads of any variety:
1st, E. L. Lewis, Immensity, $2; 2d, E. L. Lewis, Deacon, $1.
BEANS.—Half-peck of any variety:
1st, J. C. Stone, $3; 2d, W. Whitman, $2; 3d, J. Thorpe, $1.
PEAS.—Half-peck of any variety:
1st, A. Low, 999, $3; 2d, A. E. Hartshorn, Prodigious, $2; 3d, A. E. Hartshorn, Telephone, $1.
SWEET CORN.—Twelve ears:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, J. Thorpe, $1.

Gratuities:—

E. S. Converse, Melons, $2.
Col. C. H. Taylor, Potatoes, $1.
W. Heustis & Son, Tomatoes, $1.

AUGUST 1.

POTATOES.—Twelve specimens:
1st, W. J. Clemson, Early Rose, $3; 2d, E. L. Lewis, Early Rose, $2; 3d, A. Low, Early Fortune, $1.
SQUASHES.—Three specimens:
1st, A. E. Hartshorn, $3; 2d, W. Heustis & Son, $2.
SWEET CORN.—Twelve ears of any variety:
1st, A. E. Hartshorn, Crosby, $3; 2d, J. C. Stone, Crosby, $2; 3d, W. J. Clemson, Crosby, $1.
TOMATOES.—Twelve specimens:
1st, J. R. Comley, $3.

Gratuities:—

A. Low, Potatoes, $1.
S. K. Bayley, Chard, $1.
A. E. Hartshorn, Collection, $2.

AUGUST 8.

BEETS.—Twelve specimens:
1st, J. C. Stone, $3; 2d, E. L. Lewis, $2; 3d, J. Thorpe, $1
SQUASHES.—Three specimens of Marrow:
1st, A. E. Hartshorn, $3.
CABBAGES.—Three specimens:
1st, A. E. Hartshorn, Drumhead, $3; 2d, A. E. Hartshorn, Red, $2.
BEANS.—Two quarts, shelled:
1st, J. Thorpe, $3; 2d, W. J. Clemson, $2; 3d, A. E. Hartshorn, $1.

SWEET CORN.—Twelve ears:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, D. L. Fiske, $1.
TOMATOES.—Twelve specimens:
1st, J. C. Stone, Atlantic, $3; 2d, W. J. Clemson, Acme, $2; 3d, W. Heustis & Son, Earliana, $1.

Gratuities:—

W. Whitman, Beans, $1.
Aaron Low, Seedling Potatoes, $1.
E. L. Lewis, Collection, $1.

AUGUST 15.

CARROTS.— Twelve specimens:
1st, E. L. Lewis, Chamtenay, $3; 2d, E. L. Lewis, Danvers, $2; 3d, E. L. Lewis, Long Orange, $1.
PARSNIPS.—Twelve specimens:
1st, G. D. Moore, $3; 2d, E. L. Lewis, $2; 3d, E. Parker, $1.
ENDIVE.—Four specimens:
1st, W. J. Clemson, $3; 2d, E. Parker, $2; 3d, A. E. Hartshorn, $1.
SWEET CORN.—Twelve ears:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, J. Thorpe, $1.
TOMATOES.—Twelve specimens:
1st, J. C. Stone, Atlantic, $3; 2d, J. Thorpe, Atlantic, $2; 3d, J. Thorpe, Knowles' Early, $1.
EGG PLANT.—Four specimens of Round Purple:
1st, J. C. Stone, $3.

Gratuities:—

V. Buitta, Collection, $1.
Mrs. E. M. Gill, " $1.
A. E. Hartshorn, " $1.

AUGUST 22.

POTATOES.—Twelve specimens of any variety:
1st, W. J. Clemson, Early Rose, $3; 2d, E. L. Lewis, Clark's No. 1, $2; 3d, A. Low, Plymouth Rock, $1.
ONIONS.—Twelve specimens:
1st, E. L. Lewis, $3; 2d, W. J. Clemson, $2; 3d, J. B. Shurtleff, Jr.. $1
MELONS.—Four specimens:
1st, A. E. Hartshorn, $3; 2d, G. D. Moore, $2.

CELERY.—Four roots of any variety:
1st, W. J. Clemson, $3; 2d, F. Tetlow, $2; 3d, W. Heustis & Son, $1.
LETTUCE.—Four heads:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, W. J. Clemson, $1.
BEANS.—Two quarts, shelled:
1st, A. E. Hartshorn, Horticultural, $3; 2d, J. Thorpe, Goddard, $2; 3d, J. Thorpe, Horticultural, $1.
SWEET CORN.—Twelve ears of any variety:
1st, A. E. Hartshorn, $3; 2d, J. C. Stone, $2; 3d, J. Thorpe, $1.
TOMATOES.—Twelve specimens:
1st, W. Lathrop, $3; 2d, J. C. Stone, $2; 3d, A. Nixon, $1.
PEPPERS.—Twelve specimens of any variety:
1st, E. L. Lewis, Ruby King, $3; 2d, E. L. Lewis, Chinese Giant, $2; 3d, E. L. Lewis, Squash, $1.

Gratuities:—

V. Builta, Collection, $1.
A. E. Hartshorn, " $1.
A. Low, " $1.
W. Heustis & Son, " $1.
G. D. Moore, " $1.

AUGUST 29.

BEETS.—Twelve specimens:
1st, J. Thorpe, $3; 2d, J. B. Shurtleff, Jr., $2; 3d, E. Parker, $1.
MELONS.—Four specimens:
1st, G. D. Moore, $3; 2d, A. E. Hartshorn, $2.
CABBAGES.—Three of any variety, trimmed:
1st, A. E. Hartshorn, Drumhead, $3; 2d, A. E. Hartshorn, Savoy, $2.
CAULIFLOWERS.—Four specimens:
1st. W. A. Teele, $3; 2d, E. R. Teele, $2.
CELERY.—Four roots:
1st, E. L. Lewis, $3; 2d, W. J. Clemson, $2; 3d, F. Tetlow, $1.
NATIVE MUSHROOMS.—Named collection:
1st, H. B. Grinnell, $3; 2d, Boston Mycological Club, $2.
TOMATOES.—Twelve specimens:
1st, J. C. Stone, $3; 2d, E. Parker, $2; 3d, J. Thorpe, $1.

Gratuities:—

W. Heustis & Son, Collection, $3.
V. Builta, " $1.
E. L. Lewis, " $1.
A. Low, " $1.
A. E. Hartshorn, " $1.

ANNUAL EXHIBITION OF PLANTS AND FLOWERS AND OCTOBER EXHIBITION OF FRUITS AND VEGETABLES (combined).

SEPTEMBER 24, 25, 26, 27. (*Changed from September 10-13, and October 3.*)

BEETS.—Twelve specimens:
1st, W. J. Clemson, $3; 2d, A. E. Hartshorn, $2; 3d, W. Heustis & Son, $1.

PARSNIPS.—Twelve specimens:
1st, W. W. Rawson, $3; 2d, G. D. Moore, $3; 3d, E. L. Lewis, $1.

POTATOES.—Twelve specimens of any variety:
1st, E. L. Lewis, Walter Raleigh, $3; 2d, H. R. Kinney, American Wonder, $2; 3d, E. L. Lewis, Clark's No. 1, $1.

SALSIFY.—Twelve specimens:
1st, G. D. Moore, $3.

MELONS.—Four specimens:
1st, A. E. Hartshorn, Emerald Gem, $3; 2d, A. E. Hartshorn, Arlington Nutmeg, $2; 3d, A. E. Hartshorn, Montreal, $1.

SQUASHES.—Three of any variety:
1st, A. E. Hartshorn, Golden Hubbard, $3; 2d, E. L. Lewis, Marrow, $2; 3d, W. Heustis & Son, Marrow, $1.

CABBAGES.—Three specimens of any variety:
1st, A. E. Hartshorn, Drumhead, $3; 2d, A. E. Hartshorn, Red, $2; 3d, E. L. Lewis, Drumhead, $1.

CAULIFLOWERS.—Four specimens:
1st, W. H. Teele, $3; 2d, DeSouza Bros., $2; 3d, E. R. Teele, $1.

LETTUCE.—Four heads of any variety:
1st, G. F. Fabyan, $3; 2d, W. W. Rawson, $2; 3d, A. E. Hartshorn, $1.

CELERY.—Four roots of any variety:
1st, A. Nixon, $3; 2d, E. L. Lewis, $2; 3d, E. Parker, $1.

BEANS.—Lima, two quarts:
1st, Mrs. E. M. Gill, $3; 2d, A. E. Hartshorn, $2; 3d, W. J. Clemson, $1.

SWEET CORN.—Twelve ears:
1st, A. E. Hartshorn, $3; 2d, G. F. Wheeler, $2; 3d, E. Parker, $1.

EGG PLANTS.—Four Round Purple:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, A. E. Hartshorn, $1.

TOMATOES.—Twelve specimens:
1st, J. Thorpe, $3; 2d, E. L. Lewis, $2; 3d, E. Parker, $1.

MARTYNIAS.—Twelve specimens:
1st, E. L. Lewis, $2; 2d, E. S. Converse, $1.

PEPPERS.—Twelve specimens of Squash:
1st, A. E. Hartshorn, $2; 2d, E. L. Lewis, $1.
Twelve of any other variety:
1st, E. L. Lewis, Ruby King, $2; 2d, A. E. Hartshorn, $1.
CARROTS.—Twelve Long Orange:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, H. W. Anderson, $1.
Twelve Intermediate:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, J. Thorpe, $1.
POTATOES.—Twelve Carman, No. 1:
1st, H. W. Anderson, $3; 2d, E. L. Lewis, $2; 3d, C. Scully, $1.
Twelve Early Fortune:
1st, C. Scully, $3; 2d, H. W. Anderson, $2.
Twelve Hebron:
1st, H. R. Kinney, $3; 2d, E. L. Lewis, $2; 3d, H. W. Anderson, $1.
Twelve Rose:
1st, H. R. Kinney, $3; 2d, C. Scully, $2; 3d, W. J. Clemson, $1.
Twelve of any other variety:
1st, C. Scully, $3; 2d, E. L. Lewis, $2; 3d, H. R. Kinney, $1.
TURNIPS.—Twelve Flat:
1st, J. Reed, $3; 2d, G. F. Wheeler, $2; 3d, C. S. Pratt, $1.
Twelve Swedish:
1st, Mrs. J. L. Gardner, $3; 2d, J. Thorpe, $2; 3d, W. H. Teele, $1.
ONIONS.—Twelve Danvers:
1st, J. B. Shurtleff, Jr., $3; 2d, W. H. Derby, $2; 3d, W. H. Teele, $1.
Twelve Red:
1st, A. E. Hartshorn, $3; 2d, W. H. Derby, $2; 3d, W. H. Teele, $1.
Twelve White:
1st, A. E. Hartshorn, $2.
SQUASHES.—Three Bay State:
1st, G. F. Wheeler, $3; 2d, E. L. Lewis, $2; 3d, W. Wheeler, $1.
Three Hubbard:
1st, J. C. Stone, $3; 2d, A. E. Hartshorn, $2; 3d, G. F. Wheeler, $1.
Three Hybrid Turban:
1st, W. H. Derby, $3; 2d, G. F. Wheeler, $2; 3d, E. L. Lewis, $1.
Three Marrow:
1st, W. Heustis & Son, $3; 2d, J. C. Stone, $2; 3d, V. Frost, $1.
CUCUMBERS.—Pair of White Spine:
1st, J. Thorpe, $3.
Pair of any other variety:
1st, E. M. Bruce, $3; 2d, H. W. Anderson, $2.
MELONS.—Four specimens:
1st, A. E. Hartshorn, Montreal, $3; 2d, A. E. Hartshorn, Arlington Green Flesh, $2; 3d, A. E. Hartshorn, Salmon, $1.
CABBAGES.—Three Drumhead, trimmed:
1st, A. E. Hartshorn, $3.

Three Savoy:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, W. J. Clemson, $1.

CAULIFLOWERS.—Four specimens:
1st, W. H. Teele, $4; 2d, DeSouza Bros, $3; 3d, C. M. Handley, $2.

CELERY.—Four roots of Paris Golden:
1st, W. J. Clemson, $4; 2d, A. Nixon, $3; 3d, E. L. Lewis, $2.

Four roots of any other variety:
1st, E. L. Lewis, $4; 2d, W. J. Clemson, $3; 3d, A. Nixon, $2.

ENDIVE.—Four specimens:
1st, V. Builta, $3; 2d, V. Builta, $2; 3d, W. J. Clemson, $1.

LETTUCE.—Four heads:
1st, A. E. Hartshorn, $3; 2d, A. Nixon, $2; 3d, G. D. Moore, $1.

PARSLEY.—Two quarts:
1st, E. Parker, $2; 2d, A. E. Hartshorn, $1.

SWEET CORN.—Twelve ears:
1st, A. E. Hartshorn, $3; 2d, G. F. Wheeler, $2; 3d, E. Parker, $1.

EGG PLANTS.—Four Round Purple:
1st, J. C. Stone, $3; 2d, E. S. Converse, $2; 3d, H. R. Kinney, $1.

TOMATOES.—Twelve Aristocrat:
1st, J. Thorpe, $3; 2d, A. Nixon, $2; 3d, E. Parker, $1.

Twelve May's Favorite:
1st, A. Low, $3; 2d, W. Heustis & Son, $2.

Twelve Stone;
1st, A. Nixon, $3; 2d, W. J. Clemson, $2; 3d, J. Thorpe, $1.

Twelve of any other variety:
1st, E. L. Lewis, $3; 2d, A. Low, $2; 3d, J. Thorpe, $1.

PEPPERS.—Twelve Squash:
1st, A. E. Hartshorn, $3; 2d, A. Low, $2; 3d, E. L. Lewis, $1.

Twelve of any other variety:
1st, E. L. Lewis, Bull Nose, $3; 2d, E. L. Lewis, Ruby King, $2; 3d, A. E. Hartshorn, Bull Nose, $1.

Gratuities:—

E. L. Lewis,	Collection,	$5.
W. Heustis & Son,	"	$5.
A. Low,	"	$5.
V. Builta,	"	$3.
G. D. Moore,	"	$1.
H. W. Anderson,	"	$1.

CHRYSANTHEMUM EXHIBITION.

NOVEMBER 5, 6, 7, 8.

CELERY.—Eight roots, commercial grown:
1st, W. J. Clemson, Silver Medal; 2d, E. Parker, Bronze Medal.

PARSNIPS.—Twelve Hollow Crown:
1st, A. E. Hartshorn, $3; 2d, E. Parker, $2; 3d, E. L. Lewis, $1.
SALSIFY.—Twelve specimens:
1st, E. Parker, $3.
CUCUMBERS.—Pair:
1st, F. Pierce, $3; 2d, E. L. Dorr, $2.
CABBAGES.—Three Red, trimmed:
1st, E. L. Lewis, $3; 2d, A. E. Hartshorn, $2; 3d, E. L. Lewis, $1.
Three Savoy, trimmed:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, J. Parker, $1.
BRUSSELS SPROUTS.—Half-peck:
1st, A. E. Hartshorn, $3; 2d, E. L. Lewis, $2; 3d, E. Parker, $1.
CAULIFLOWERS.—Four heads:
1st, C. M. Handley, $3.
CELERY.—Four roots:
1st, A. Nixon, $3; 2d, W. J. Clemson, $2; 3d, E. Parker, $1.
ENDIVE.—Four specimens:
1st, A. E. Hartshorn, $3; 2d, A. E. Hartshorn, $2; 3d, E. Parker, $1.
LETTUCE.—Four heads:
1st, E. Parker, $3; 2d, E. L. Dorr, $2; 3d, G. D. Moore, $1.
YELLOW CORN.—Twenty-five ears, traced:
1st, E. Parker, $3; 2d, E. M. Bruce, $2; 3d, C. Scully, $1.
TOMATOES.—Twelve specimens, grown under glass:
1st, Hittinger Bros., $3.

Gratuities:—

A. Nixon,	Collection,	$5.
E. L. Lewis,	"	$5.
A. E. Hartshorn,	"	$4.
W. Heustis & Son,	"	$4.
H. F. Gowell,	"	$1.
Goodell Farm,	"	$1.
J. C. Stone,	"	$1.

WARREN HOWARD HEUSTIS,
VARNUM FROST,
WALTER RUSSELL,
AARON LOW,
GEORGE D. MOORE,
JOSHUA C. STONE,
MICHAEL SULLIVAN.
} *Committee on Vegetables.*

Mrs. A. W. Blake's Estate, Brookline.

REPORT

OF THE

COMMITTEE ON GARDENS

FOR THE YEAR 1903.

By PATRICK NORTON, CHAIRMAN.

The Committee on Gardens has been called many times this year to view the successes of gardeners in their varied attempts to perfect the numerous estates on which they labor. How well they have succeeded is left for your committee to chronicle in this report of its observations. The estates inspected will be treated in the order in which they were visited and at the end of the report will be found a list of the awards made.

W. W. RAWSON'S CUCUMBER HOUSE, ARLINGTON.

The first visit was on May 13 to the market garden of W. W. Rawson at Arlington, to inspect a house devoted entirely to the growing of cucumbers. The house was four hundred fifty feet long by fifty feet wide and contained seven hundred vines planted in the ground. The vines were very healthy looking and heavily fruited. The fruit was of the White Spine variety and of longer size than ordinarily seen on vines in the open garden. Mr. Rawson's careful selection of seed is, in a measure, accountable for the fine quality of the product. In the particular house inspected (there were twenty others on the estate) the seed was planted January 20, set out in the greenhouse March 4, and picking began April 5. At the time of the visit eighty-seven boxes containing ninety cucumbers each were being marketed daily. The picking would last until July 1.

Mrs. A. W. Blake's Estate, Brookline.

On June 11 your committee was called upon to visit the estate of Mrs. A. W. Blake at Kernwood, Brookline. This consists of about fifty acres situated in the heart of this splendid town and is noted for having been in the family for a great number of years. The estate is cared for by Henry Wild and is in a most excellent condition; it is covered with fine specimens of trees, shrubs and flowers.

One of the rarest, hardy plants we noticed was a noble specimen of the climbing hydrangea which had attained great size and beauty. The central situation of this estate makes it a most desirable place of residence.

Goodell Farm, Wenham.

On June 13 the committee visited Goodell Farm at Wenham to inspect a strawberry garden. This consisted of about nine thousand square feet in matted beds and was very well fruited considering the adverse weather during the springtime. The attention of the committee was called to a chance seedling found by the manager of the farm growing on top of a gravelly knoll. It presented such a favorable appearance when discovered that he transplanted it to the farm and hopes to show the fruit the coming year at the Rose and Strawberry Exhibition. It is a very large berry something after the style of the Marshall and is named the Windmill after the estate on which it was found. The varieties cultivated on the Goodell Farm are the Gladstone, Minute Man, Sample, New York, Nick Ohmer, besides the Marshall and others. The committee's experience in growing large berries does not favor growing them in matted beds as the heavy foliage retains so much moisture that it is liable to rot the best berries on the plants.

Hadwen Park, Worcester.

The next visit was made on June 25 by invitation of the President of our Society, O. B. Hadwen, Esq., to inspect a large area of land which he has lately presented to the City of Worcester for park purposes. This tract of land comprises some fifty acres

Mrs. A. W. Blake's Estate, Brookline.

most of which is covered by a magnificent growth of forest trees, principally oak, chestnut, and pine. The land is remarkably well adapted for park purposes as the surface is so varied by ridges and valleys as to make a most attractive landscape. As one rides on the tops of these ridges the scene is constantly shifting and gives visitors delightful vistas up and down the valleys. The park is being constantly improved by the judicious planting of choice shrubbery and the clearing away of underbrush and fallen leaves, thereby giving the surface of the ground under the large trees a very clean, cool, and comfortable appearance.

This land borders for more than half a mile, upon Curtis' Pond thus adding a very pleasant feature to the landscape.

Worcester is fortunate in having a citizen of so much public spirit and generosity; and this gift of Mr. Hadwen's will always be appreciated and will be to all future generations, as well as the present, a "thing of beauty and a joy forever."

George D. Moore & Son's Vegetable Garden, Arlington.

The next visit this season was to the market garden of George D. Moore & Son at Arlington which occurred June 26. A house of cucumbers was the first to attract our attention. This house was two hundred twenty-five feet long by forty feet wide and contained four hundred fifty vines heavily fruited and in fine condition.

The variety was the White Spine and the vines were planted in the ground. We noticed that some of the finest specimens were reserved to ripen for seed and we commend this method of improving the quality of the product. The Moores are very successful in growing cucumbers and, in fact, everything else they undertake and they have no difficulty in disposing of their crops in the neighboring city, at remunerative prices. The vegetable farm of some fifteen acres was heavily cropped with the choicest beets, celery, beans, onions, cabbages, rhubarb, tomatoes, spinach, corn, salsify, parsnips, melons, and peas, presenting a fine appearance.

Miss E. Jackson Clark's Estate, Pomfret, Conn.

On July 9 the committee visited La Plaisance, the estate of Miss E. Jackson Clark at Pomfret, Connecticut, to inspect two graperies and an orchard house all under one roof, the extent of which is one hundred feet by twenty-six feet, divided into three equal sections. The grape houses contained nineteen and sixteen vines respectively which were heavily fruited with large and well-finished bunches of grapes. Some of the product of these grape houses was exhibited the present season by John Ash, the manager of the estate, at the exhibition of the American Pomological Society at Horticultural Hall, Boston, where it attracted a great deal of attention and received the Wilder Medal for excellence. The fruit house, or more properly called the orchard house, was a surprise to your committee as it contained a greater variety of fruit than we ever saw before under glass. This consisted in part of peaches in variety, pears, plums, apples, nectarines, figs, etc. and the trees were fairly well fruited and presented a healthy appearance. It will be of interest to add in this connection that the grapes, peaches, and nectarines were grown in twelve-inch pots while the apples and pears were in ten-inch pots. The melon house, a photograph of which is herewith reproduced, was also inspected. On account of the uncertainty attending the cultivation of the melon in the open, in this section of the country, the growing of them under glass is increasing.

By request of the committee Mr. Ash contributes to this report the accompanying notes upon his methods of cultivation.

La Plaisance, Estate of Miss E. J. Clark, Pomfret Centre, Conn., John Ash, Superintendent.

Culture of Fruit Trees in Pots.

It gives me great pleasure to give a few hints from my experience in the cultivation of fruit trees in pots. These can be procured either direct from England or through any reliable importer of fruit trees. Fruiting trees, imported late in the fall, will bear a full crop the following summer and in this way apples, pears, peaches, nectarines, cherries, grapes, apricots, etc. can easily and successfully be grown either in a house especially devoted to them or in peach houses, and later in the season, when more ventilation is given, in graperies. The temperature of a peach

La Plaisance: Residence of Miss E. Jackson Clark, Pomfret Connecticut.

Melon House of Miss E. Jackson Clark.

house suits hardy fruit trees admirably and you thus utilize to advantage space which otherwise would be producing nothing. When the trees are growing they can be fed liberally with liquid barnyard manure, until the fruits show signs of coloring, when nothing but clear water must be given and the trees allowed to become drier at the roots than they have been during the period of swelling their fruits, in order to insure flavor and sweetness. After the fruits have been gathered, the trees must be placed outside, standing the pots on boards, where they can get abundance of sunshine and natural outdoor conditions, in order to thoroughly ripen the wood, as on this treatment, of course, depends the success or failure of the next year's crop. The trees can be left outside until there is danger of frost breaking the pots, then move them into a cool greenhouse or a light, cool cellar, there to remain until needed for forcing. The trees should then be turned out of the pots, the drainage carefully examined and renewed where necessary; remove with a pointed stick a little of the outer soil from the ball, then put back into the pots and fill in with new soil in which has been mixed a quantity of bone, and your trees are ready for another season's product.

The following is a list of fruits grown at La Plaisance under glass:

APPLES.—Washington, Emperor Alexander, Peasgood's Nonsuch, Mother, Melon, Bismarck, Lady Henniker, Cox's Pomona, Mannington Pearmain, King of Tompkins County, Cox's Orange Pippin.

PEARS.— Buerre Hardy, Durandeau, Fondante d'Automne, Conference, Marie Louise, Pitmaston Duchesse, Doyenne du Comice.

CHERRIES.—Bigarreau Noir de Guben, Emperor Francis, White Bigarreau, Reine Hortense, Early Rivers.

PLUMS.—Early Transparent Gage, Oullin's Golden Gage, Grand Duke, Blue Rock, Coe's Golden Drop, Jefferson, Nonsuch, Belgian Purple.

PEACHES.— Gladstone, Dagmar, Thomas Rivers, Duchess of Cornwall, Hale's Early, Crawford's Early, Royal George, Princess of Wales, Alexander, Barrington, Dymond, Crimson Galande, Spencer.

NECTARINES.—Humbolt, Cardinal, Early Rivers, Lord Napier, Victoria, Downton, River's Orange, Pine Apple, Pitmaston Orange.

FIGS.—Bourjassotte Noire, Brown Ischia, Brown Turkey, Figue d'Or, Violette Sepor, White Marseilles.

GRAPES.—Diamond Jubilee, Black Hamburg, Canon Hall Muscat, Madresfield Court, Mrs. Pearson, Foster's Seedling, Buckland Sweetwater, Mrs. Pince, Alnwick Seedling, Muscat of Alexandria, Gros Maroc, Lady Down's Seedling, Gros Guillaume, Black Alicante.

Melons under Glass.

The varieties of melons grown under glass here last year, of which the accompanying photograph gives a partial view, were Frogmore Scarlet, Lord Derby, and Invincible Scarlet, principally. I also grew a few Rocky Ford and Emerald Gem, both of which did very well. The variety Lord Derby is thought very highly of here.

The melons succeeded a crop of tomatoes and were planted about May 1st in hills composed of good stiff loam, three feet apart, and a night temperature of 65° maintained, allowing the sun heat to run up to 90° with judicious ventilation.

As the plants grow and extend their roots, the spaces between the hills are filled in with good heavy loam in which is mixed a liberal portion of well-rotted cow manure. When watering the plants great care must be taken not to saturate the soil immediately around the stem of the melon as they are very apt to decay if any moisture lodges there. If any decay is noticed a little unslaked lime, powered fine, and put on carefully wherever any rotting appears will invariably stop it. The house above mentioned, which is thirty-three feet long by sixteen feet wide, produced over two hundred melons last year, the first fruits ripening about the first of July.

JOHN ASH.

MRS. J. C. WHITIN'S ESTATE, WHITINSVILLE.

The next visit occurred on August 17 when we were called to inspect a house of foreign grapes on the estate of Mrs. J. C. Whitin at Whitinsville, Massachusetts.

This house was furnished with nineteen vines of eight varieties of the very best kinds grown. The vines were filled to repletion with fine, large bunches of uniform size and presented a splendid appearance. The house was a credit to William McAllister, the manager of the estate, and was very much admired by the committee.

A. E. MONBLO'S GARDEN, MALDEN.

Our next visit was made September 3 to the village estate of A. E. Monblo at Malden to inspect a small area of the "India" raspberry growing in the garden. This fruit is quite new to your committee, although it was brought to this country a good many years ago. It is very attractive in appearance having glossy green foliage and a brilliant scarlet fruit of large size. The fruit is of a very mild flavor and can be eaten in all the various ways that other small fruits are, and is quite an acquisition to the amateur gardener. If some one will cross it with the Cuthbert raspberry to give it more flavor it will, doubtless, become an exceedingly valuable addition to the list of small fruits.

Mrs. J. C. Whitin's Estate, Whitinsville.

H. H. Rogers' Estate, Fairhaven.

H. H. Rogers' Estate, Fairhaven.

On September 4 we visited the estate of Henry H. Rogers, Esq. at Fairhaven. This estate is entered for the H. H. Hunnewell Triennial Premium and this year completes the three years' entry. We were much pleased with the skill with which the gardener of the estate, James Garthley, has done his work and he deserves great credit for his taste in beautifying the place and in the massing of flowers and foliage plants and in making them grow so luxuriantly under such adverse conditions. The whole area of the estate was once a huge granite ledge which has been leveled off and covered with soil and a goodly number of acres reclaimed and made into a fine, soft lawn surrounded with a grand border of beautiful trees, shrubs, and flowers. The estate comprises about twenty-five acres and has been most judiciously handled by Mr. Garthley to make it a luxurious place in which to reside. We award this estate the H. H. Hunnewell Triennial Premium.

J. B. Lawrence's Dahlia Garden, Abington.

We visited on September 15 the dahlia garden of J. B. Lawrence at Abington. This garden contained about an acre of land fully covered with plants in full bloom and presented a very fine sight. The garden is replenished every year with the new varieties as they are brought out, thereby keeping up the enthusiasm of the growers and stimulating the interest of cultivators in this now popular flower.

W. P. Lothrop's Dahlia Farm, East Bridgewater.

The next visit occurred on September 29 when we visited W. P. Lothrop at East Bridgewater to view his dahlia farm. This consisted of four acres fully covered with fine plants in full bloom. Mr. Lothrop is an enthusiastic cultivator of this class of plants, procuring all the worthy, new kinds as they are introduced, thereby keeping his collection up to the times so that he can supply his customers every year with all the choicest varieties in cultivation.

The dahlia is easy to cultivate and by its free flowering, provided the soil is not too rich, well repays the small amount of labor required in attending to it.

Hon. E. S. Converse's Estate, Malden.

On November 3 we visited the fine, old homestead of Hon. E. S. Converse at Malden to inspect a chrysanthemum house arranged for effect with other decorative plants, and also a house of chrysanthemums planted on benches. The house arranged for effect was one hundred twenty feet long by twenty feet wide with a path down the center, on each side of which the plants were placed in a most artistic manner. Sixty-five very large plants, a large number of standards and small plants, and many decorative plants were used to fill in to make up a house of floral beauty not often seen on any estate. The skill with which the plants are made to obey the will of the artist gardener (David F. Roy in this case) rather than their own natural conditions is one of the wonders of horticulture and is achieved only through long experience and the taking of infinite pains by the enthusiastic gardener. The display in the house planted on benches was far ahead of anything your committee ever inspected. There were five hundred plants trained to one stem and flower embracing one hundred and seventy varieties of the very finest plants in cultivation. The variety of form and coloring was wonderful and beyond description and the effect was very beautiful. The citizens of Malden are fortunate in being allowed by Mr. Converse free access to this scene of beauty. On one day over seventeen hundred persons enjoyed this privilege much to their delight.

Edmund W. Converse's Estate, Newton.

On November 4 your committee visited the noble, old estate of Edmund W. Converse at Newton to inspect a house of chrysanthemums arranged for effect with other decorative plants. This house was not large, only fifty feet long by twenty feet wide, but it was filled with a goodly number of large and small plants arranged by the gardener, Robert Marshall, in a very

artistic manner. This being our first visit to this place, your committee was very much pleased with the cordial reception extended and with the general, grand appearance of the whole estate.

The Prizes and Gratuities awarded this year are as follows:

H. H. HUNNEWELL TRIENNIAL PREMIUM.

For an estate of not less than three acres, which shall be laid out with the most taste, planted most judiciously, and kept in the best order for three consecutive years:	
First, Henry H. Rogers	$160 00

SPECIAL PRIZES FROM THE JOHN A. LOWELL FUND.

For the best house of Chrysanthemums, arranged for effect with other plants:	
First, Hon. E. S. Converse	25 00
Second, Edmund W. Converse	10 00
For the best house of Chrysanthemums grown on benches:	
First, Hon. E. S. Converse	25 00

SPECIAL PRIZES OFFERED BY EDWARD HATCH.

For the best Fruit House, plants grown in pots or tubs included:	
First, Miss E. Jackson Clark	30 00

SOCIETY'S PRIZES.

For the best House of Foreign Grapes:	
First, Miss E. Jackson Clark	25 00
Second, Mrs. J. C. Whitin	10 00
For the best Strawberry Garden:	
First, the Goodell Farm	25 00
For the best Dahlia Garden:	
First, W. P. Lothrop	25 00
Second, J. B. Lawrence	10 00
For the best Vegetable Garden:	
First, George D. Moore & Son	25 00
For the best House of Cucumbers:	
First, Warren W. Rawson	25 00
Second, George D. Moore & Son	10.00

GRATUITIES.

O. B. Hadwen, for Hadwen Park $25 00
Mrs. A. W. Blake, for Estate 25 00
A. E. Monblo, for "India" Raspberry 10 00
Mrs. J. C. Whitin, for Estate, a Silver Gilt Medal.
David F. Roy, for Superior Cultivation of Chrysanthemums, a Silver Gilt Medal.
John Ash, for Superior Cultivation of a House of Fruits, a Silver Gilt Medal.

Respectfully submitted,

PATRICK NORTON,
ARTHUR H. FEWKES,
KENNETH FINLAYSON,
E. W. WOOD,
WARREN H. HEUSTIS,
J. H. WOODFORD,
HENRY W. WILSON,
J. WOODWARD MANNING.

Committee on Gardens.

Hon. E. S. Converse's Estate, Malden.

REPORT

OF THE

Committee on School Gardens and Children's Herbariums.

FOR THE YEAR 1903.

By HENRY LINCOLN CLAPP, CHAIRMAN.

Weeding and watering in Spring.

GEORGE PUTNAM SCHOOL GARDEN.

A new impetus was given to the work in the George Putnam School garden in the spring of 1903 by the gift of five hundred packages of flower seeds from Hon. Henry F. Naphen, Representative to Congress and a resident of South Boston. Each of the paper bags composing the five hundred contained packages of flower seeds, such as centaurea, eschscholzia, clarkia, nasturtium,

Visit of the Normal School Girls.

sweet pea, phlox, portulaca, calendula, calliopsis, cosmos, dianthus, mignonette, and coreopsis, all of which are pretty sure to produce beautiful flowers whose blossoming period is long.

A gentleman who learned of this gift said: "Well, there, that is a distribution of seeds that has amounted to something. The seeds have fallen into the right hands. I have been skeptical for years in regard to the free distribution of seeds from Washington; but if it is to take this form I have nothing but commendation for it."

Not only were the seeds given to the children who had gardens at school, but to those who had them at home, or to those who manifested interest enough in gardening to make a garden at home for the first time. This apparently insignificant gift of a few seeds furnished a motive far-reaching in its nature.

In the first place the seeds were from a celebrated place, Washington, the Capital of the United States. Each package had a stamp of high authority,—"U. S. Department of Agriculture." If on this account the seeds were imagined to possess

Weeding in the Autumn.

exceptional value, interest in them was increased. Secondly, they were the gift of a celebrated man, a Representative to Congress, who, no doubt, had heard of the children's garden work, and, in consequence, had kindly remembered them.

The pupils of the school for many years have been accustomed to write a composition regularly once a week on a subject that could be properly classed under one of the four following heads: experience, imagination, reproduction, letter. I suggested that

all the gardeners who had received seeds from Mr. Naphen should write him a letter of their experiences with the seeds. They did so. The following extracts from their letters attest the genuineness of their work and their enjoyment in it.

A reminder of Millett.

EXTRACTS FROM
PUPILS' LETTERS TO HON. HENRY F. NAPHEN.

MR. HENRY F. NAPHEN,
SO. BOSTON, MASS.

DEAR SIR:

I thank you very much for the seeds you gave to us. When you sent them we were all delighted. Mr. Clapp gave us all one large package apiece which contained five small ones. Then he described them and told us how deep to plant them, after which we went out into the garden and planted them. We had a very nice time that afternoon. After that we were all watching to see who would have the first flower.—WM. WAUTERS.

DEAR SIR:

I received your seeds in the spring and had just enough to make a pretty garden. The school gardens looked very pretty this summer, and we regret very much that you did not come to see them.

In two corners of my garden I had chrysanthemums, and in the other two I had fleur-de-lis. Between the chrysanthemums I planted sweet peas, and between the fleur-de-lis I planted nasturtiums. I had a straight line down the centre in which I planted marigolds.

I took a great deal of pleasure in watching the flowers grow. I also planted lettuce, radishes, turnips, and carrots. Last Thursday I went out to the gardens and picked an armful of turnips and carrots, and another armful of chrysanthemums.—KATHERINE M. FINN.

Unfortunately of the different seeds I received and planted I had success with only two, sweet peas and nasturtiums. I also planted radish and lettuce seeds, lima beans, and a few dahlias, which all grew very well, as we had a very rainy summer. With constant care I went to my garden as often as I could I do believe that it did us as much benefit as could be expected. I sincerely regret that it is only one year that we have for garden study, because I surely know we should be more able to take care of it another year.—EDITH SIKORA.

Two years ago I had a garden which I was much interested in. The first thing I did was to take a fork and dig the earth up, then pick out the weeds and stones; then rake it over and get ready for planting. I did that in one lesson on Monday. During the week I planted seeds of radishes, nasturtiums, and lettuce.

The lettuce plants were the last to come up, but they were fine. In another week they were so near together that I had to separate them the same way as the radishes.

I kept my garden clean from weeds and in a few more weeks I had radishes for dinner. They were fine and rosy and they tasted better than they looked. The lettuce was nice and tender and I had a very successful garden.—FRANK E. WHITE.

The first thing that I did when I got out was to choose a garden. I chose one facing Dixwell Street that got a lot of sun and that had dark, damp soil.

Of course the first thing that I did was to weed my garden, and it was quite a hard thing to do because there were great big weeds, and their roots were so fast in the ground that it made big blisters on my hands to pull them up.

I came up a few times during vacation and watered my garden and took out the weeds. I was very sorry to lose it because I so enjoyed taking care of it.—PAULINE BIESENBACH.

It was last year when some of the pupils received a school garden from our schoolmaster. We went out in the month of October to loosen the

soil. After we got through we started to plant bulbs of different kinds. They were placed in circles, each containing one half-dozen.

The next spring they came up finely. Some pupils had tulips and others different kinds. Later on we received different kinds of seeds from Mr. Clapp. He told us to plant each kind in one straight line, which we all did. Afterwards we planted many kinds of vegetable seeds, and some did not come up right.

In vacation time we went up and weeded our gardens. After we came back to school we had so much to do that we didn't know where to start. Mr. Clapp told us that you were the man that gave us the seeds. Thank you.—WILLIAM FLOTOW.

I thank you kindly for your gift of seeds. I enjoyed planting them very much.

I think it is a very good idea that the girls and boys learn agriculture. One of the pleasantest afternoons was Monday, the time we went out gardening. I think I should enjoy having a little farm of my own.—EDITH MORAN.

One day last year Mr. Clapp, our principal, came into the room and asked who had gardens at home. Then he asked us what we had in our gardens. He picked out a number and told us to get our hats and go into the gardens and choose one for ourselves.

The gardens are quite large. They are about ten feet long and eight feet wide. There were a great many weeds to be pulled up, and to this task we set ourselves as soon as possible. Then we hoed up the ground to see that there were no roots or bulbs in it.

Then the seeds were given out, and I am sure we all thank you very much for sending us the seeds. Then the numbering of the packages came in this order: golden wave, Chinese pink, nasturtium, and sweet pea. I planted lettuce which did not come up at all, and radishes which came up finely. Mr. Clapp bought some Windsor beans and distributed them. When mine came up there were not enough beans for a mouthful, when cooked.—MINNIE NAGEL.

DEAR SIR:

I thank you very much for the seeds I received from you, and am pleased to say that they came up nicely. About half of my garden was planted with flowers, while the other half was planted with Windsor beans, radishes, and lettuce.

Whenever we came up from our gardens we always had some flowers. The girls picked a bunch and gave them to the teacher. The boys put them in their button holes. I am sorry that I have to lose my school garden.—BENNO BERNSTEIN.

My garden has a fine location, being sunny and also sometimes shady. I planted my seeds in circles, and with the exception of the sweet peas they came up in circles. But alas for the sweet peas! I waited and

waited for them, and to tell the truth, felt quite discouraged. But when they did come up, what then? Well, if every gardener had been blind I think he would have known my sweet peas were growing, I was so proud of them.

How we worked pulling the weeds! And you possibly couldn't imagine how pleased we were as we presented our first flowers to our teacher. When our principal or any visitors spoke in praise of our gardens how happy we looked! Yes, indeed, those seeds were the source of our pleasure. We shall always be grateful to you for them.—MAY G. MORSE.

When I first got my garden I had to weed it out, it was full of weeds and some of the weeds were so tall and so hard to pull up that I had to hoe them up.

The next difficult work was to hoe up the whole garden. It was full of stones and large rocks. When I got it all hoed up I had to rake it off, and at last I had it looking fine.

I planted some crocus, tulip, and snowdrop bulbs. One day in April I went out to see if any of my bulbs had come up, and to my surprise I saw six crocus blossoms and two of the sweet snowdrop blossoms. None of my tulips came up. I suppose that they got frozen during the winter.

In the summer I used to come and weed my garden out so that the weeds wouldn't kill the flowers or vegetables.

I got some beets, radishes, turnips, and carrots out of my garden, in which I took a deal of pleasure. I have a garden this year too.

I brought six dozen and a half bulbs to school to plant in my garden this year.—GRACE BOYD.

My garden had a row of nasturtiums in the southern portion; on the western side Windsor beans; on the north side nasturtiums; and on the eastern part a mixture of little clusters of sweet peas, nasturtiums, and marigolds. In the centre I had a large dahlia.

Through the summer I have made many enjoyable trips to my garden. Though it was situated in the sunny portion, and it was rather hot pulling weeds, after I was through it proved very pleasant to look upon.

We have had a frost and all the pretty little heads have bowed and fallen asleep, and those who want the tulips and crocuses in the spring are planting their bulbs now. I put a covering over my pansies and I expect I shall have blossoms in the spring.—THERESA DAY.

Last year I had a very pretty garden which I disliked to give up. We have only one year of gardening, which passes very quickly. I had many varieties of flowers, some of which are in bloom now. Some hot days it was quite tedious pulling up the weeds, but when the flowers sprung up it was a great repayment for the labor.

We had many pictures taken when the gardens were in bloom. Some were taken when we were hoeing, raking, weeding, or examining flowers.

I like gardening very much and I have one at home.—MARGUERITE ROULEAU.

A person of ordinary intelligence will see that the work described in separate bits by these letters is surely of that kind that leads back to the soil. A love for gardening acquired early in life will move the one who has it to seek the country some time or other. That is a matter of great importance to city and country alike. The problems of congested cities have never been properly solved. Educational centers where heat, light, entertainment, and

Ready for planting.

instruction in music, art, letters, and trades are all free gifts, where opportunities for "going somewhere every night" are given, present the strongest inducements not only to those already in the city to stay in, but to those outside to come in by any and every means whatsoever. Educational centers have started a problem more insoluble than the old ones. The movement rd separation which has made some progress during the past years has been checked by this new and opposite movement

toward concentration. Hereafter greater concentration must be wrestled with.

The effect of concentration is already shown by statistics to be dangerous to the welfare of Massachusetts and Boston especially, and the educational systems of the state and city should do something to counteract that effect.

Dr. William A. White, Superintendent of the Government Hospital for the Insane at Washington has found out, "as

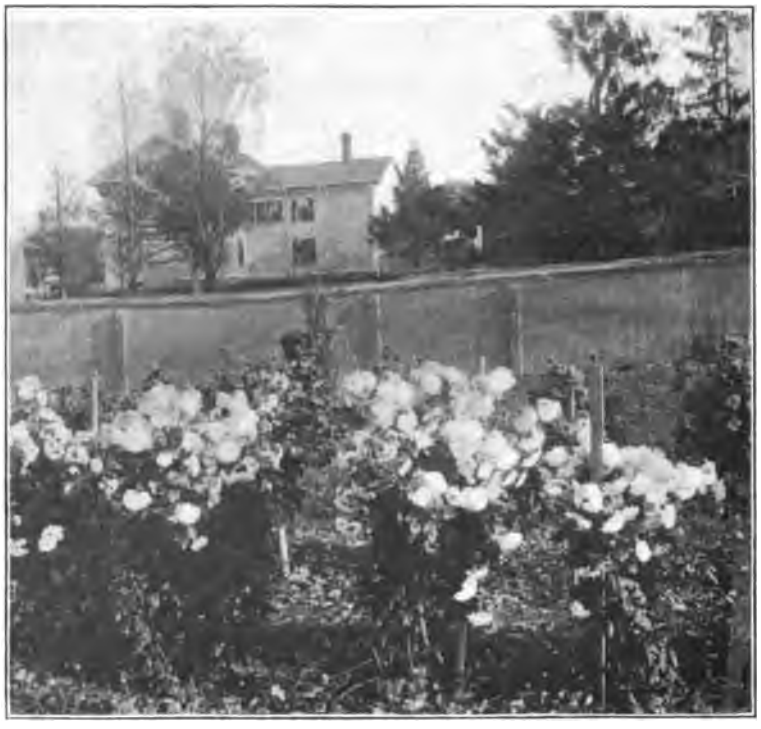
Planting bulbs.

clearly by the census of 1850 as by that of 1880, and it is confirmed by every census that has been taken," that Massachusetts has the largest amount of pauperism relatively to the population of all the United States, and that Boston is the centre of insanity as well as pauperism in the United States. "Where population is densest, the struggle for existence is keenest—the survival of the unfit is at work; and increased insane asylums and almshouse facilities become a necessity."

"The frontiersman who takes his family and goes west to open up new territory, *to engage in legitimate agricultural pursuits*, and

to grow up with the country is pretty apt to be of hardy stock, and insanity, if it appears at all, comes in later generations."

So the schools should educate pupils not wholly for city life as now, but actually lead them out to the country where there is room, light, air, and sweetness; should interest them in and prepare them for that life; should understand that educationally,



Hardy Chrysanthemums.

socially, and productively, distribution is quite as important as concentration for the uplifting of the race. If cities would spend as much on properly distributing families, and inducing or forcing the lazy and shiftless to work as they do on alms-giving, asylums, and free gifts of educational facilities that bind the participants more and more firmly to cities, in time pauperism, insanity, and vagabondage would decrease, to say the least.

The young can learn no better lesson than to work for what they get. That is the lesson of the garden. The city generally gives a lesson of another sort. Get as much as you can without earning it. The grafter's resort is at city halls; the plumber represents what may be expected from workmen; the lazy and shiftless "work" the churches and the benevolent old ladies; the

Productive energy.

schools supply books, all sorts of school material, shoes and clothes; the educational centers furnish free entertainment and instruction; and the city treasury is generally considered common poaching ground. The garden demands honest, exacting work; the results balance the labor; the laborer must render an equivalent for what he receives; the garden cannot be "worked" by drones and whiners; the "grafting" is on trees, not on pocketbooks.

Again, to implant a love for horticulture in the hearts of children is of great importance to the horticultural societies for their maintenance and satisfactory progress. During the year 1903 thirty members of this society died. Recruits must be found to fill the places of the aged horticulturists removed by death. If the filling up of the ranks is left to chance or to the educational centers of the present type, the outlook for interest and advance steps in horticultural affairs is by no means promising.

If state boards of education and horticultural societies realize fully that the continued prosperity of this nation depends primarily on agriculture and secondarily on the mill, the mine, and the workshop, they should be manifesting it by some appropriate action. They admit the educative value of the workshop, but say little and do less concerning land culture, perhaps because united shopmen are so aggressive and farmers so retiring.

Dedham School Garden.

At the Oakdale School, East Dedham, about ten miles from Boston, there has been laid out by Mr. Fred H. Kennard, the landscape gardener, a model school garden which probably surpasses any other garden of the kind in this country. There is a botanical garden for native plants containing twenty-six beds, each four feet wide and eighteen feet long, where fifty-two children can dig, weed, water, and study. At the rear of the large lot is a kitchen garden with forty-eight beds, each four feet wide and twenty-two feet long. Ninety-six children can be given garden work there. Adjoining this garden is a small lot designed for a nursery where pupils are to be taught to prune, graft, and transplant small trees. One hundred eighty varieties of trees, shrubs, and vines have already been planted, and many more are to follow.

Children's Gardens in New York City.

At present DeWitt Clinton Park, in the centre of New York City, is a tract of barren land, except a small plot two hundred feet long and one hundred feet wide, which is used as a children's garden. Each garden is four by twelve feet and there are over two hundred of them. The boys and girls raise the ordinary

quick-growing vegetables—radishes, lettuce, peas, beans, onions, beets, turnips, carrots, endive, kale, as well as buckwheat, wheat, rye, and oats for materials to study in school.

Mrs. Parsons, the director, says it is easier to furnish an occasional farm plot than to maintain reformatories and prisons later on. A little house of one room has been built and two little housekeepers a day are appointed and taught how to keep things clean and orderly. In their zeal to keep things clean the children sometimes wash clean towels and the little pig "Clinty," and dust the roof.

This is a commendable educational center.

The Home Gardening Association.

The Home Gardening Association of Cleveland, Ohio, has done a great work in inducing school children to plant seeds and raise flowers in a barren and unattractive part of the city.

There were sold to the children at one cent a packet 116,489 packets of seeds, and in the fall 11,000 bulbs were sent to the school buildings. "Last year every room was brightened by these flowering bulbs. More yards have been cleaned up, more beautiful gardens are in evidence, and our city is showing the effect of seeds planted in 25,000 homes."

This work was begun in the spring of 1900, meetings have been held once a month during the winter and weekly during the summer, lectures on school gardens and floriculture illustrated with lantern slides have been given, and the desert has been made to blossom like the rose. Let others do likewise.

The Hartford School of Horticulture.

Whoever is interested in school gardens should secure the report of work done at this institution during the year of 1903. "The one hundred sixty-nine gardens, with the observation and fertilizer plots, together with the nursery and fruits, cover several acres of land. Twenty-two of the gardens belonged to adults, mostly teachers, twenty-seven to boys from the Watkinson Farm School, and one hundred twenty to boys and girls from the city."

The beds are of three sizes, 10x25, 10x30, and 10x40. This year only six free gardens were allowed to each school. The

other gardeners paid a tuition of $5.00 for first year's instruction, $7.00 for second, and $10.00 for third. One boy earned over $50 and secured a position as a gardener in the city. September 18 there was a school garden exhibit for which prizes were awarded by Rev. Francis Goodwin, who is president of the association. In the evening one hundred and fifty lantern slides of school gardens were shown. The report will tell the remainder of the good story.

THE COBBET SCHOOL GARDEN.

The garden of the Cobbet School in Lynn was visited by the writer in July, 1903. It contained hundreds of native plants transplanted from woods, fields, and meadows, by the pupils of the school under the guidance of Mr. Philip Emerson, the principal. The season was dry and the plants were evidently suffering for water and without care. Being planted under trees next to

the street their location seemed to be somewhat unfavorable to their survival. There was evidence of a great deal of work having been done. This garden received second prize from this Society.

The pupils of the school did some very interesting experimental gardening at their homes and other places, as shown by the enjoyable letters which they wrote to their principal and of which some are reproduced here.

The work has been started enthusiastically and successfully.

We are glad to include in this report Mr. Emerson's account of his garden and the use made of it.

COBBET GRAMMAR SCHOOL.

Philip Emerson, Principal.

LYNN, MASS., Oct. 19, 1903.

Mr. HENRY L. CLAPP,
George Putnam School,

MY DEAR MR. CLAPP:

I send you herewith a statement of progress and plans for the Cobbet School gardens, as formal entry of specifications for the competition for school garden prizes for the current year.

We are expecting to complete the placing of soil for the wild garden strip beside the street fence before the school ere the frost stops work. In April, 1902, our yard was a waste of gravel and ashes, save for a few weeds and spears of grass. Now we have two strips of wild garden, about ninety and sixty feet in length and ten feet each in width. Over half is densely planted with wild shrubs, vines, herbs, and ferns. Only thirty feet is as yet unplanted. I herewith give a list of some two hundred thirty-one plants named in my Gray's Botany, which we have established on our grounds during the last year and a half. Many are represented by large clumps, like the panicled cornel, or by scattered specimens, like the New England aster. Some biennials may have to be re-established another spring. However, the list is a conservative statement, omitting all grasses, for instance, and weeds that were accidentally introduced and have not been labeled with the other plants. Some of the children have started wild gardens at home, and our labels suggest such common wild plants as will succeed best at home. Some plants have been set out by my boys at the primary schools they formerly attended.

Over five hundred square feet of space is planted with hardy garden perennials of many species and varieties, such as phlox, asters, lilies, Japanese anemones, bleeding heart, poppies, chrysanthemums, pentstemons, larkspurs, bell-flowers, peonies, and the like. Over one hundred

species and varieties in all. Several dozen children received roots of such hardy perennials as lily-of-the-valley and the pearl for home planting, and this work is to be extended another year.

Two beds and a long strip are devoted to spring and summer flowering bulbs, tulips, cannas, etc., and to a variety of the old-fashioned annuals. The pupils of several classes have grown such flowers in their home gardens.

A bed at the rear of the school was devoted to an economic garden. Cotton, tobacco, corn, peppers, sorghum, sugarcane, millets, sugar beet,

Making the garden.

and other roots, such as parsnip, alfalfa, cow peas, and other forage crop plants, etc., were grown in properly placarded plats. An exhibit was made at the Houghton Horticultural Society exhibition this fall of the products of this garden and those previously named, which secured the first prize, in competition with all other Lynn schools.

A vacant lot was secured for use by boys for individual vegetable gardens. Work was delayed through expectation that the lot would be sold. Finally it was opened in the middle of the drought. It had already been ploughed by a friend. It was divided into forty plots averaging one hundred fifty square feet in size, by the boys under the direction of the principal, and the plots were all assigned to girls and boys applying for

the privilege. The tough sods and stones were discouraging, and the lots of some boys with heavy home duties and living on the other side of the school district did not prove a success. In spite of the drought and the depredations of thieves others remained faithful and harvested crops from all seeds planted, their corn, vegetables, etc., being taken home and eaten. The coming year the work will be carried on at the school yard and at the children's homes, rather than on a vacant lot. Some forty dollars' worth of loam at eighty cents a double load have been delivered at the school, and will be used in the main for a long strip of school vegetable gardens. These are being prepared by eighth grade boys exclusively, and their gardening will run parallel to the fortnightly cooking school lesson of the eighth grade girls. Earnest and systematic effort will be made to have many pupils plant and care for a home garden of flowers and vegetables that shall be their very own. This was done systematically by only one entire room this year; though some pupils in other rooms took up the plan moved by the force of this example.

Our gardens are very new, indeed, and very far from what we intend to make them; but considering that even the soil for them had to be bought, and the holes for the soil picked out by main strength from the hard ashes and stones of the yard, the progress made since April, 1902, may, perhaps, be deemed worthy of some prize. If so, we shall highly prize the honor as a stimulus to all our pupils, and at once turn over the cash toward completing payment for the soil ordered for our vegetable gardens of another year.

I recall that you ask as to use made of school garden. The wild garden supplies material for nature study and for drawing lessons. The garden annuals and perennials are regularly drawn on for material for lessons in sketching, painting, and designing. Some of the exhibits testify to this. The gardens of economic plants supply illustrative material for the regular lessons in geography. For instance: wheat, barley, etc., which the children otherwise never see growing. The wild garden has the plants labeled with common name and brief descriptive remarks. The children observe their times and seasons and become familiar with their names. This proves a better plan than merely bringing picked flowers to the school rooms in connection with a calendar of flowers as they brought them in. However, the old ways are not discarded. They go on side by side with the yard garden, the one supplementing the other. Many citizens come to the garden to learn the names of wild flowers. For instance: one lady said she had a number of wild flowers that sprung up yearly at home from stocks her son transplanted years ago. She had not known their names until she learned them last spring at the school garden.

Yours very respectfully,

PHILIP EMERSON.

LETTERS ON PLANTING BY PUPILS OF THE COBBET SCHOOL, LYNN.

DEAR MR. EMERSON;

Prescott and I have a garden up to my father's farm in Saugus. We go up some nights after school and weed and water it. It is about twelve feet long by five feet. I planted most of it myself because Prescott was sick. I planted most of it on April 20, 1903. I had planted a little lettuce at home before in a box, and then I transplanted it.

We call our garden the "White Feather Farm." When I told my father the name he said we would have to call it the "Black Feather Farm" if it didn't rain soon. We each got the seeds for nothing, and we sell what we raise. So far we have made about sixty-five cents together. Our largest radish is about one-half inch in diameter. We sell them two bunches for five cents (six in a bunch). We sell the lettuce three cents apiece, or two for five cents. We sell to the neighbors and our own families. We have beets also in our garden.

My father said that if we would weed and pick his corn and potatoes he would give us some; and if we would do it to the peas he would pay us. We are going to do it. We have seven rows of lettuce about a foot apart, and a row and a half near together. We have two rows and a half of large radishes and two rows of small radishes. We have two rows of beets. We have more land left and can get more if we want it.

The way we water is a queer one. There is a long hose attached to the house. One of us goes up and turns on the water while the other fills the watering pots. Then we go and water. We do this several times. I must close now,

Yours sincerely,

PAUL B. JOHNSON.

This is the first year I ever tried planting vegetables, although they did very well. I planted my radishes April 13, and they were up April 20. In about a week after that they were so thick that I had to thin them out. This garden was in a box in the house.

I planted my outdoor garden about three weeks after this. I planted lettuce and radishes. Inside of two weeks they were up. They, too, grew very thick. The first I saw were two little leaves. Then as they grew other leaves forced their way up through the two first ones.

These (two) next leaves were very rough like a cat's tongue. The lettuce was the same at the start, but the first two leaves were larger.

Not long after this I pulled one up and saw that it had begun to form. Then in about a week I pulled another up and found that I had a radish.

I planted some sweet peas later and they are climbing up the wire very good.

Yours truly,

HARRY KANE.

My home garden is getting along very well. About the month of April I planted some radish seeds, but I didn't have very good luck with them, because my father said I planted them too deep. I got out of patience waiting for them to come up, until one day I saw one coming up. That was the only one that came up out of that crop.

After a while I got a bed made out of doors and planted more seeds. They came up and we had some to eat. I planted another crop a few days ago out of doors, they are all up about an inch now.

I expect to have some radishes before long.

Last Sunday morning I planted some seeds in my box. They have not come up yet, but I expect they will be up by tomorrow. My bed I have out of doors is about three feet by two and a half feet.

My box is about two feet by half a foot. I keep it out of doors side of my other garden. I am having the best luck with my garden out of doors.

Yours truly,

ETHEL LUFKIN.

April 20 I begun my home garden that I am going to tell you about. The first thing I got my box ready which was about two feet by one foot. This I filled full of sifted dirt which I got in a vacant lot. I brought it home and sifted it thoroughly. Then so much was ready.

The next evening I went down town and bought half a dozen packages of seeds. I planted two of these packages, which contained pansies and asters. In about a week they popped their little heads above the ground. They were so small that I pulled many of them up thinking they were weeds or small pieces of grass. Each of them was composed of two little leaves. Sometimes when I went to water them they would break and fall to the ground.

Now they are growing beautifully and the pansies look like little trees. The asters are all in a row and look strong and healthy. This is how they look so far, but they have to grow lots more before they will be able to bear blossoms.

I shall be very glad to write more and tell you about them when they bear blossoms. You will hear about them later.

Yours truly,

OLIVE G. M. PILLION.

I planted my garden the first of May. I planted beans in rows that were two and one-half yards long. I planted twelve rows. They are up now about two feet and in a few weeks will be ready to eat. I planted corn in ten rows three yards long and now it is up a foot. Monday I planted one dozen and a half tomato plants and they are coming up good. If you would like to, come down and see them some night.

Yours truly,

J. O'CALLAGHAN.

Report of the Director of the Children's Gardens, Groton, Mass.

By Miss Elizabeth Sewall Hill.

This garden was started in May, 1902, by the Village Improvement Association. Miss Louise Klein Miller was director until June; then Miss E. S. Hill took it for the rest of the year. It was located in the Lawrence Playground, one hundred feet by ninety-seven feet, and worked

Groton Children's Garden.

by ten boys; each individual garden being ten by ninety-seven feet. It was a great success.

This year we have twenty-five workers, besides the twelve at West Groton. The garden is three hundred feet by sixty feet; two hundred feet for the boys and one hundred feet behind the boys for the girls' part with a path between.

Four of the plats were very wet. I let some of the boys plant them as they pleased and they proved very good.

I had two plans, one for the boys and one for the girls. All planted the same thing at the same time. As fast as one crop was harvested another took its place; turnip, cabbage, or carrot taking the place of spinach Nearly all had two crops of lettuce, three of radish, two of peas, and spinach cut back several times.

It was not expected that these gardens would be equally good. Nineteen were almost perfect, while the others were not quite as good. There were many reasons for this; some were on newly ploughed land, others on old; some boys had last year's experience, others were new to the work; some were eighteen years old, others eight; the rain ran in rivers through some gardens, rotting and carrying away seed, so that planting in these was delayed. I am glad to say the rain did not dampen the ardor of the children, they came rain or shine, blow high or low. When it rained too hard we would flee to the tool house and I would give them a lecture on fertilizers, birds, insects, or some kindred subject. The mud was so deep and sticky I felt as if walking on snowshoes.

We came out of it all right and had beautiful days to work. One boy went home one night with his potatoes in a wheelbarrow and a large bunch of nasturtiums on top. It was all he could do to push it along, but he was a proud boy. Everyone stopped to see his treasures.

The gardeners were told just how and what to plant, then if they wished to experiment they could. For instance: some tried hilling potatoes, others tried open culture; some put the potatoes in with fertilizer, others covered the potatoes first. Then they compared notes.

The head of each row was placarded so it was known where everything was.

These two gardens cost the Village Improvement Society just sixty dollars for tools and salary of director for this year. The children paid for nothing; all they do is to work.

The judges met in the garden every month and gave marks for each garden. They were very strict, marking on the scale of one hundred, taking off ten for every fault. Weeds in paths, weeds in garden, too thick planting, vacant rows, rows out to edges, general appearance, etc., were marked. These marks grew better steadily, and at the last judging were excellent. Conduct also counted. If there was a tie between a boy who had behaved well and one who had not, the former would have the prize. The best gardens were worked by the best children. The steadiest and most punctual oftenest came out ahead.

The prizes were divided into three classes; for girls; for big boys; for small boys. Daniel Needham won the first prize of four dollars. He had a fine garden, although he had to plant his corn twice as it rotted on account of the dampness. Another boy had too much corn in his garden, so when this corn was two feet high Daniel transplanted sixteen hills, three stocks in each hill, and they all lived and bore fruit within a month.

The Farmers' and Mechanics' Club offered special prizes for the best display of vegetables, and of these D. Needham took the first ($3.00), Charles Morse, the second ($2.00), and Arthur Mason, the third ($1.00).

THE CHILDREN'S GARDENS AT WEST GROTON, MASS.

These gardens were started in May, 1903, by the Groton Village Improvement Association. The land was loaned by a citizen and is one hundred feet by fifty feet, and was divided among twelve workers. There are many more children who want gardens, and next year we will have

Results.

another one for girls. Thirty dollars were given by individuals; fertilizers and manure by farmers; and seed by the U. S. Agricultural Department, all but corn, beans, potatoes, turnips, and carrots, which I begged from storekeepers and farmers. A good many of the tomatoes were raised from seed and others were given.

The evening primroses were transplanted into the gardens. Our specialty is transplanting, and we have tried everything in the garden; sunflowers three feet high; corn two feet high; tomatoes, very large, with almost ripened fruit; squash, in fruit; turnips, parsnips, potatoes, and poppies; and everything has lived.

The children have all their produce to sell, eat, or give away. One boy last year supplied his family with vegetables all summer, and I should say from all accounts, has done the same this summer. The lettuce in one boy's garden would have netted him three dollars, if sold. The radishes in one girl's garden two dollars, beets two dollars, besides beet greens. They more often give away than sell.

After Fourteen Years.

Fourteen years ago, to be exact, March 22, 1890, in a paper entitled, "Horticultural Education for Children," which I had the honor to read before this Society, I made use of these words: "If there is so great an advantage in the establishment and use of school gardens, why has the matter not been attended to by the school authorities? It is well known that the best educational impulses come from without,—from philanthropic individuals or institutions. We need not go outside of Boston for proof of this. The sewing schools, cooking schools, kindergarten and manual training schools, now corporate parts of our school system, were started and carried beyond the experimental stage by private individuals. Mrs. Shaw and Mrs. Hemenway looked farther into the future than the Boston School Committee."

We realize the correctness of this opinion better for our experience during the past fourteen years, during which time nearly all the important garden work for the benefit of children has been undertaken by philanthropic individuals and associations. The Massachusetts Horticultural Society, the Massachusetts Civic League, the Twentieth Century Club, the Home Gardening Association of Cleveland, Ohio, The National Cash Register Company, the Hartford School of Horticulture, the Hale House Farm at Watertown, the Commercial Club of Indianapolis, the Civic Improvement League of St. Louis, the Ohio Students' Union, the Milwaukee Outdoor Art and Improvement Association, the Groton Improvement Association, Mrs. Henry Parsons at DeWitt Clinton Park, New York, the Women's Auxiliary of the American Park and Outdoor Art Association, Mr. W. J. Stevens at

Carthage, Ohio, and others began and sustained the work in their respective localities, while the educational authorities applauded doubtfully, or shuddered at the apparition of this new thing which to them looked much like another fad.

But, at last, after years of earnest advocacy of garden work, an impression has been made on some school authorities. In the report of the American Park and Outdoor Art Association, we read "that school gardens are being started in connection with fifteen or twenty normal schools, that officers of ten or twelve agricultural colleges are preparing school garden plans and courses and otherwise coöperating in the work, and that departments of public instruction all over the United States are displaying much interest and activity in the school garden movement."

"In Vermont the State Normal School at Johnson maintains a half-acre experimental school garden in connection with the training school. A portion of the garden is devoted to coöperative flower and vegetable growing by the pupils in the lower grades, the remainder to a potato crop in charge of grammar grade pupils, each of whom has 'one long row to hoe.'"

Excellent garden work is carried on at the normal schools in Boston and Hyannis.

Proposed Work.

Educators and philanthropists are being impressed with the educative and civilizing nature of garden work, and intend to make extensive use of such work, as evidenced by their letters to me.

Mr. R. H. Cowley, inspector of public schools in Carleton County, Ottawa, writes: "I am to some extent supervising the inauguration of a school garden movement in Canada, and during the summer it is likely that a group of five school gardens will go into operation in each of the following provinces: Ontario, Quebec, Nova Scotia, New Brunswick, and Prince Edward Island. A specially trained travelling instructor will have charge of each group and spend one day per week at each garden."

This calls for five instructors and the establishment of twenty-five gardens. And what are Massachusetts and Boston doing to show an appreciation of such work? The State Board of Education has done nothing yet. Boston last year started garden work

in connection with summer schools in six grammar school districts, under the charge of one instructor, new to the work. Evidently the appropriation was scarcely munificent, since an application to have the George Putnam School garden taken care of during the summer vacation, met with no response. So the one who established it several years ago and has sustained it since hired a gardener to care for it during the long vacation.

Dr. Mary D. Hussey of East Orange, N. J., writes: "I am planning to start one (a school garden) here on several acres of land my father owns opposite a large public school attended mostly by well-to-do children. I know a good deal about gardening, but little about managing children." She says there are 3000 school children in the town. She has already brought the matter before the school board, and desires to work up the school garden and then present its merits to the civic leagues and improvement associations in the state.

Mr. William W. Woollen of Indianapolis, in the report of the American Park and Outdoor Art Association says: "I am seeking to establish a garden of birds and botany for the benefit of our schools. I have forty-four acres which will be deeded to the city for the use of the public schools. Fifteen acres can be devoted to gardening, and here I would like to have growing every hardy plant known in this country."

School Gardens Discussed.

Wherever teachers' conventions have been held, the school garden topic has come up. Sometimes a whole session has been devoted to its consideration as in the case of the American Park and Outdoor Art Association and the great National Education Association. I never before was so much impressed with the importance of the subject in the estimation of progressive educators as when President Eliot asked me to speak on that topic at the meeting of the latter association in Mechanics' Hall, July 8, 1903, when about two thousand educators and others were present and evidently much interested, since the evening was very warm and the open cars and the beaches promised a much more comfortable evening than one in a hall.

Two thousand persons interested in school gardens and school grounds! I regret that I could not use my ninety convincing

lantern slides, illustrating children really at work, not simply posing, in order to add to the interest in the talk and the reality of the work described. The "incidental remark," that pupils in the ninth grade in the George Putnam School during eight years had studied ferns delightedly and therefore successfully, led President Eliot to say, "That, ladies and gentlemen, is the entire philosophy of the new education."

Mrs. H. L. T. Wolcott.

Oct. 8, 1903, Mrs. Wolcott, one of the oldest, most enthusiastic, and most cherished members of our committee died. In 1878 she began her work of interesting children in growing plants, and from that time on to the period of her last illness she continued her efforts, in one form or another, to interest children in nature studies. She was instrumental in having appointed, in 1878, a Committee on Window Gardening, of which she was chairman as long as that committee existed, 1894, when a new direction was given to the work of interesting children in plant life; and, accordingly, there was appointed a new committee called the Committee on School Gardens and Children's Herbariums, of which she was chairman one year, and a member until she died, with the exception of one year when she was traveling in the South, California, and the Sandwich Islands.

She was acquainted with many of the leading botanists of the country, including Galloway, Halstead, W. T. Brigham, formerly botanist of the queen of the Sandwich Islands, and others; and wherever she went she sang the praises of her committee, circulated its reports, and continually directed the attention of interested people to the educational and charitable work of the Massachusetts Horticultural Society.

Her whole life seemed to be a charitable mission. The value of her work for destitute girls is beyond estimation. Always engaged in some uplifting work, intolerant of calumny, impatient with seemingly unappreciative and callous hearts, an outspoken opponent of any commercial tendencies in this Society, and an earnest advocate of every educational and philanthropical effort made by it, she held its standard to the highest eminence and reflected its credit the length and breadth of our country, and even to the isles of the sea.

Children's Herbariums.

The herbarium specimens exhibited by the children, November 27 and 28, 1903, more than doubled the number shown in 1902. The certainty of receiving a money prize for every specimen accepted by the committee may have had some influence in bringing out eleven hundred specimens, over sixty of which were not accepted on account of imperfections and poor mounting, probably the result of hasty preparation.

The many finely mounted specimens always to be seen at the exhibitions show what is expected by the committee, and leave no excuse for presenting a second time, specimens hastily collected, pressed and mounted. Indeed, some of the very finest work has been seen in first exhibits, notably those of Dorothy Metcalf, Dorothea Dudley and Christine Clapp, Austin W. Cheever, Olive L. and Marion L. French at the last exhibition, and Vanessa Denton, Lucy D. Ellis, Arthur E. French, and Arthur C. Faxon at previous exhibitions.

When the specimens are naturally small these exhibitors have mounted several on the same sheet, knowing that a specimen one or two inches high looks lonesome on an area of white paper 11½ by 16¼ inches. When they have thus placed four or five specimens on the same sheet, they have avoided a parallel position of the stems and made them radiate like the sticks of a fan. They have preserved all the natural curves of grasses and sedges, have been careful in choosing leaf sprays so as to present good forms on the mounting sheet, and have been remarkably successful in preserving the natural colors of blossoms. All this requires much painstaking, which is one of the objects of the committee in holding the exhibitions.

Only those who can remember the beginning of this work in 1891 can realize how great the improvement has been in regard to the points named above.

Never before in the history of the Society has there been exhibited so large and fine a collection of mosses and lichens. They presented an unusual opportunity to botanists to become acquainted with these comparatively little understood plants. Dr. Grout and other competent bryologists gave their valuable services in helping to name the rarer specimens.

These young girls, Christine and Dorothea Clapp, not yet beyond school age, have done a work quite scientific in character and one that would do credit to a professional botanist, bryologist, or lichenologist. Sixty-three different kinds of mosses, with a

Aster laevis: Geo. Putnam School wild garden.

smaller number of lichens, carefully chosen, especially in regard to fruit and vigorous growth, furnished a most valuable object lesson, especially to all those interested in such plants.

Mrs. P. D. Richards, whose fine exhibits of wild flowers and

mosses for a score of years have done so much to create and sustain an interest in such plants, came in on crutches in company with interested friends to see these fine collections, as it were to say, "How do you do?" to each old acquaintance and call it by name. If this illustration of the influence of mind over matter has nothing to do with the doctrine of Christian science, it certainly shows how strong and abiding an interest a person, man or woman, boy or girl, may have for some form of Nature's works; and that is reason enough for interesting children in such things. Nature's works furnish the greatest and purest refreshments to the spirits of man. There is no happier or more contented man than the naturalist.

Prizes and Gratuities Awarded for School Gardens and Children's Herbariums.

SCHOOL GARDENS.

George Putnam School, Roxbury, first prize	$15 00
Cobbet School, Lynn, second prize	12 00
Children's Gardens, Groton, third prize	10 00

CHILDREN'S HERBARIUMS, NOVEMBER 27 AND 28.

Austin W. Cheever, Mattapan, ferns and flowers,	$10 70
Dorothea Clapp, Dorchester, mosses,	7 50
Margaret Dow, Brookline,	7 00
Ruth Robinson, Watertown,	6 50
Dudley Clapp, Dorchester, leaf sprays,	5 25
Lois A. Leavitt, Ayer,	3 50
Richard Murdoch, Roxbury,	3 05
Christine D. Clapp, Dorchester, lichens,	2 50
Dorothy Metcalf, West Roxbury,	2 30
Marion L. French, Sudbury,	2 25
Olive L. French, Sudbury,	1 80
Joseph Murdoch, Roxbury,	1 75
Gladys Mason, Groton,	1 30
W. C. Swain, Roxbury,	60
Barbara Swain, Roxbury,	50
F. W. Swain, Roxbury,	45
C. D Swain, Roxbury,	25
D. W. Swain, Roxbury,	25
Total for Gardens and Herbariums,	$94 45

The amount of money appropriated by the Society for the use of the committee was:

For Prizes and Gratuities	$100 00	
For Current Expenses	50 00	$150 00
The Committee has expended		113 25
Balance unexpended		$36 75

HENRY L. CLAPP, *Chairman*, Roxbury,
MISS KATHARINE W. HUSTON, Roxbury,
WILLIAM P. RICH, Chelsea,
CHARLES W. JENKS, Bedford,
HENRY S. ADAMS, Boston,
W. E. C. RICH, *Secretary*,
99 Moreland Street, Roxbury, Mass.

Committee on School Gardens and Children's Herbariums.

REPORT

OF THE

COMMITTEE ON NATIVE PLANTS

FOR THE YEAR 1903.

By Charles W. Jenks, Chairman.

The Schedule was arranged as usual with prizes offered for native plants on five dates, for cultivated native plants on three dates, and for ferns on one date.

Your committee has been much disappointed in the number of collections shown; thirty-seven prizes were offered and for these only twelve exhibits were made.

We notice with regret the absence of several of our former contributors and as yet their places have not been filled. We are in doubt as to the reason of the decrease of exhibits, whether it has been caused by the less accessible location of the new hall, or by the decrease in the amount of the prizes offered, or the natural result that at intervals of a few years one set of exhibitors drop out and later their places are filled by others. We have thought best to reduce the number and increase the amount of the prizes for the ensuing year and hope to see again the old names and faces as well as new ones.

The exhibits were all of high quality, carefully named, and presented in good condition. They were creditable to the Society and the exhibitors and evidently appreciated by the visitors to the hall.

The usual number of rare and interesting specimens were shown; of these it seems desirable to record *Cnicus horridulus*

from Maine, shown by Edward S. Colburn, the first verified report of that species from the state.

No exhibits were made in the class of cultivated native plants and the former contributions of Miss Noyes and our late Secretary, Mr. Manning, were much missed.

The regular offer of the Society has been "To the exhibitor who gains three or more first prizes during the season, the Appleton Silver Medal"; "To the exhibitor who gains the next greatest number, the Appleton Bronze Medal"; Edward S. Colburn won three first prizes and is awarded the Silver Medal. Mrs. Arthur Clark won one first prize, one second, and one third; Miss Isabelle C. Shattuck won one first; your chairman is of the opinion that either a bronze medal should be awarded to both Mrs. Clark and Miss Shattuck, each having won one first prize, or that no bronze medal should be given as no single exhibitor gained the next greatest number; the others of the committee do not agree with me and think the medal should be given Mrs. Clark for having obtained three prizes while Miss Shattuck had only one. I can not myself see how this decision can be arrived at from the wording of the Schedule but as the majority vote of the committee has been in its favor the Appleton Bronze Medal is awarded Mrs. Arthur Clark. In the Schedule for 1904 we have endeavored to prevent a similar recurrence.

PRIZES AND GRATUITIES AWARDED FOR NATIVE PLANTS.

1903.

MAY 9.

NATIVE PLANTS.—Collection of thirty bottles of named species and varieties, one bottle of each.

1st., Edward S. Colburn, $4.

JUNE 6–7.

NATIVE PLANTS.—Collection of thirty bottles of named species and varieties, one bottle of each:

1st., Mrs. Arthur Clark, $4; 2d, Mrs. W. S Eager, $3; 3d, Edward S. Colburn, $2; 4th, Miss Margaret Titcomb, $1.

JULY 11.

NATIVE PLANTS.—Gratuity for collection;
Edward S. Colburn, $2.

JULY 18.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:
1st, Miss Isabelle C. Shattuck, $4; 2d, Edward S. Colburn, $3; 3d, Mrs. Arthur Clark, $2.

JULY 25.

NATIVE FERNS.—Collection of named species and varieties:
1st, Chester C. Kingman, $5; 2d, Miss Isabelle C. Shattuck, $4; 3d, Misses E. A. and M. S. Doran, $3.
Gratuity.—William Whitman.
Display of ferns not entered for prize, $2.

AUGUST 8.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:
1st, Edward S. Colburn, $4; 2d, Mrs. Arthur Clark, $2.

SEPTEMBER 24.

NATIVE PLANTS.—Collection of forty bottles of named species and varieties, one bottle of each:
1st, Edward S. Colburn, $4; 2d, Miss Mildred E. Bliss, $3.

Appleton silver medal, for gaining three first prizes during the season, awarded to Edward S. Colburn.

Appleton bronze medal, for gaining the next greatest number; awarded to Mrs. Arthur Clark.

Amount appropriated for the use of the committee		$125.00
Amount of Prizes, ...	49.00	
Amount of Gratuities, ...	4.00	
Cost of Medals, ...	10.05	63.05
Balance unexpended		61.95

CHARLES W. JENKS,
WILLIAM P. RICH,
MISS MARY RODMAN.
} *Committee on Native Plants.*

REPORT

OF THE

COMMITTEE ON FORESTRY AND ROADSIDE IMPROVEMENT

FOR THE YEAR 1903.

By James Sturgis Pray, Chairman.

To the President and Members of the Massachusetts Horticultural Society:—

The Committee on Forestry and Roadside Improvement respectfully report:

The principal work carried on by this committee has during the past year continued to be the gathering and arranging for ready reference and useful deduction all possible information with regard to the distribution, treatment and condition of the roadside trees of this Commonwealth "with a view to publishing a report of these conditions, coupled with recommendations to the tree wardens and others having to do with the preservation and increase of the arboreal beauty of our roadsides."

The collating, tabulating and mapping of the facts brought out in the replies to our widely distributed circular have now been completed. The arrangement of a considerable part of the information (that relating to work done, condition of trees, soils, diseases and pests, and effective ways in which they have been combated; different forms of tree-guards and their relative merits as shown by experience; injurious effects of electric wires, gas, and pavements; advertisement placards; noteworthy individual trees; real estate values as affected by planting or removal of roadside

trees; the celebration of Arbor Day; work in the schools; town by-laws relating to trees, etc.) was set forth in the last report of this committee, and its special value shown. The tabulating and mapping, however, of the records of distribution were not at that time completed. By these now completed tables, one can at a glance find the record, so far as our information goes, for any of the 81 species of trees listed in our circular in any one of the 353 cities and towns of the Commonwealth from which we have heard. That is to say whether the species grows in the given town wild or planted or both, whether in either case it is common, frequent, occasional, or rare, or whether it does well or not. In a series of outline maps, one for each species, the same information has been shown graphically in color.

It was hoped before the end of the year to have completed the detailed report upon all this valuable material. The present writer, however, upon whom the task devolved of draughting this detailed report has been unable, as yet, through pressure of other duties to give to the work the very considerable time its proper accomplishment will require. Moreover, although the amount of information is already great, and the replies are from towns well distributed over the state, nevertheless, a more complete response to certain of the inquiries set on foot by the committee is very much to be desired before it be attempted to publish a report embodying careful generalizations and deliberate recommendations. On the whole then the uncertainty of being able in the near future to give to the completing of this task, including the collection of further material and the draughting of the report, the time it will require, moves the writer to accompany this annual statement with all the material already in hand, leaving to the Society to carry the matter further or not, as it may see best. He believes that even in its present form it will be of service to members of the Society and others interested in our roadside trees, and he recommends that it be kept accessible in connection with the Society's library in such way as may be determined by the Librarian or the Library Committee. Should the writer later see his way clear to taking the matter up again with a reasonable prospect of completing the undertaking, if the Society has meanwhile made no other disposition of it, he will at such time come to the Society for the material. It should be

said moreover that in its present form the material has already been of service to, among others, the Massachusetts Highway Commission who have now undertaken to set out trees along the state highways, and it will, if kept accessible, continue to be of aid to them.

As has been true in previous years, a still more important work of the committee may fairly be said to have been the correspondence with tree wardens and others and helping them constantly with information and advice. In this work the committee has labored not only through the medium of correspondence as heretofore, but has given to tree wardens actual instruction on the ground in roadside thinning and pruning. Of the many cases this year of this individual help, one of the most noticeable was the aid given by this committee through one of its members, Mr. James H. Bowditch, to the tree warden of Weston. Mr. Bowditch visited Weston, made a very thorough investigation of the facts touching upon the then lively controversy between the tree warden, the Board of Selectmen, the County Commissioners, and the Newton Street Railway Company, and afterwards made a report which accomplished the saving of, among other good trees, two of the finest elms in the state, which would otherwise have been unnecessarily cut in the process of widening the boulevard through that town. This correspondence with tree wardens, which has during the last six years occupied so much of the time of the writer, may, he thinks, now very properly be left to the secretary of the Massachusetts Forestry Association, a salaried officer, one of whose special functions is to actively engage in such aid.

The committee has continued to distribute as occasion has offered the propaganda of the Society for the Protection of Native Plants and the American Park and Outdoor Art Association. It has further actively coöperated with the Massachusetts Forestry Association and the Appalachian Mountain Club in supporting the former's bills before the Massachusetts General Court providing for the appointment of a state forester and the better protection of forest lands; with the Society for the Protection of New Hampshire forests in its efforts to secure effective legislation looking to the eventual establishment of a forest reservation covering

the greater part of the White Mountain region; with the International Society of Arboriculture in its efforts to create wider spread interest and more active work in rational tree planting in different parts of the state and country; and with the Outdoor Art League of California in supporting the bill before Congress providing for the permanent preservation of the famous Calaveras Groves of Big Trees in California.

Respectfully submitted for the Committee,

JAMES STURGIS PRAY,
NATHANIEL S. SHALER,
HENRY S. HUNNEWELL,
JAMES H. BOWDITCH,
HARLAN P. KELSEY.

Committee on Forestry and Roadside Improvement.

REPORT

OF THE

COMMITTEE OF ARRANGEMENTS

FOR THE YEAR 1903.

By Joseph H. Woodford, Chairman.

The year just closing has been one of about the usual importance to our society and the exhibitions held during the season have been largely attended.

The halls have been arranged for the best accommodation of exhibitors and the public and we do not hear of any complaint from any source whatever.

We are very glad to chronicle the fact that fifty new folding tables have been constructed by our efficient janitor, Jackson E. Hall, of such good dimensions as to better accommodate exhibitors and not detract from the appearance of the halls when used.

At some of our large exhibitions we feel the need of additional glassware, and would suggest that the Treasurer consult with the janitor as to our needs and then proceed to supply the quantity required to make up the deficiency during this coming winter.

The fund placed to the credit of your committee for extraordinary expenses has been expended in such a manner as to redound to the best interests of the society.

We are glad to be able to express our appreciation of the manner in which the daily newspapers of the city have treated our exhibitions by liberal notices and photographic illustrations, and we sincerely hope that this custom may continue under the new management just being inaugurated by our society.

We are glad to be able to welcome new exhibitors to our exhibitions, thus filling up the gaps occasioned by the dropping out of some of the veteran exhibitors.

We append an account of the money received for entrance fees at the three exhibitions at which admittance was charged.

Spring Exhibition, March, ...	$637.75
Annual Flower Show, September, ...	631.75
Chrysanthemum Show, November, ...	788.00
	$2057.50

All of which is respectfully submitted.

JOSEPH H. WOODFORD,
WARREN H. HEUSTIS,
PATRICK NORTON,
ARTHUR H. FEWKES,
KENNETH FINLAYSON,
E. W. WOOD,
ROBERT FARQUHAR.

Committee of Arrangements.

REPORT OF DELEGATE

TO THE

STATE BOARD OF AGRICULTURE

FOR THE YEAR 1903.

Some changes have been made this year in the officers of the State Board of Agriculture. Hon. J. W. Stockwell, the Secretary, resigned, to take effect July 1, and J. Lewis Ellsworth of Worcester was elected to fill the position. Mr. Ellsworth seems well fitted for the place, being a practical cultivator of experience, of excellent executive ability, and a genial man making hosts of friends.

P. M. Harwood of Barre was elected general agent of the Dairy Bureau to succeed G. M. Whitaker of Boston. Mr. Harwood, having served as assistant to his predecessor, was well qualified for the position and I believe is giving general satisfaction.

The Winter meeting of the Board at Athol, December 1, 2, and 3 was a great success; it was one of the largest and most enthusiastic of its meetings.

The program which embraced subjects of practical interest to cultivators was as follows:

Progressive and Profitable Poultry Culture; by Prof. Arthur A. Brigham.

A Forest Policy for Massachusetts; by Dr. B. E. Fernow.

The Value of Art and Skill in Industry; by Hon. Carroll D. Wright.

Outlook for New England Agriculture; by Dr. George M. Twitchell, Editor of the Maine Farmer.

The Successful Type of Horse that may be profitably raised by New England Farmers; by Henry W. Smith.

The Manurial Problems in Soil Renovation and Improvement; by Dr. Homer J. Wheeler.

I would again call attention to the Hatch Experiment Station at Amherst and its work, particularly to the entomological department. Now that insect pests are so abundant it should be remembered that the professors at that institution are ready to answer inquiries for information. When it is considered how rapidly the San José scale is increasing in eastern Massachusetts it would be well for owners of small estates in this section to apply at once for remedies.

Winter is the time to destroy this pest.

WILLIAM H. SPOONER,
Delegate.

December 31, 1903.

REPORT OF THE INSPECTOR

TO THE

STATE BOARD OF AGRICULTURE

FOR THE YEAR 1903.

To the State Board of Agriculture,

GENTLEMEN:—In response to your directions that I inspect the Massachusetts Horticultural Society I make the following report.

The society held meetings with addresses by persons proficient in horticulture, and skilled matters immediately relating thereto, during the winter and spring months, in excess of the requirements of the Board.

The appropriations for prizes and gratuities for the year were:—

For Plants,	$1,500.00
" Flowers,	1,875.00
" Native Plants,	125.00
" Fruits,	1,275.00
" Vegetables,	900.00
" Gardens, Greenhouses, etc.	375.00
	$6,050.00

The society has special funds the income from which is used to encourage improvements in fruits, plants and flowers, vegetables, etc. These have been given by public-spirited citizens, whose confidence in the society resulted in encouraging liberality in a worthy cause. The H. H. Hunnewell prizes to encourage the

establishment of "Estates of not less than three acres" is a noteworthy act that will always associate that distinguished horticulturist with this society.

The names of F. B. Hayes, J. D. W. French, W. J. Walker, J. S. Farlow, Josiah Bradlee, Marshall P. Wilder, J. Lewis Russell, H. A. Gane and others, who have established funds in the keeping of the society will always be remembered by the good they have done to advance horticulture. The degree of usefulness of these funds is to be gauged by the intelligent and up-to-date care with which they shall be administered in the future.

A noted act of the society during the past year has been the unanimous adoption of a new set of By-laws; the Act of the Legislature incorporating the society in 1829 forming its Constitution, with amendments thereto made by more recent Acts of the General Court. The growth of the society in membership and financial standing has made the changes advisable.

The society has held numerous free exhibitions throughout the past year of an educational and horticultural character; and has also held three extensive pay exhibitions in March, September, and November, which attracted large crowds who have been gratified, educated, and encouraged on this line of work.

The society has a large and useful plant for its work, in a centre of the city of Boston that is developing fast. Every encouragement that the State can give to this child of hers in horticulture cannot be misplaced. It would be a case of helping the worthy who are helping themselves to advance.

Respectfully submitted,

FRANCIS H. APPLETON,
Inspector.

REPORT

OF THE

COMMITTEE ON LECTURES AND PUBLICATION

FOR THE YEAR 1903

By AARON LOW, CHAIRMAN.

The Committee on Lectures and Publication presents the following summary of its work for 1903.

A course of eight lectures has been delivered, as follows:

January 10. Remunerative Outdoor Occupations for Women. By Miss Mary E. Cutler.

January 17. Some Experiences and Observations in Berlin by a Massachusetts Farmer. By Benjamin P. Ware.

January 24. Systematic Pomology. By Prof. F. A. Waugh.

January 31. What the United States Department of Agriculture is doing for the Farmer. By Prof. C. S. Walker.

February 14. Characteristics of some Southern Trees (with stereopticon illustrations). By Miss Emma G. Cummings.

February 21. The Apple as a Money Crop for New England; Its Culture and Preparation for Market. By F. C. Richards.

February 28. The Demands on Agriculture in the Present Century; How shall we meet them? By Hon. J. W. Stockwell.

March 14. Parasitic Fungi of Field and Orchard. By Prof. L. R. Jones

The annual Schedule of Prizes was issued, as usual, in January and the following numbers of the Transactions have been published and distributed during the year.

1902, Part I, Issued February 16.
1897, " III, " " "
1902, " II, " July 6.
1903, " I, " " 7.

AARON LOW,
JAMES H. BOWDITCH,
E. W. WOOD.
Committee.

REPORT

OF THE

SECRETARY AND LIBRARIAN

FOR THE YEAR 1903.

The seventy-fourth year of the Society's existence has been marked by an interest well sustained in all the various departments of its work. There appear to be no lessening of devotion to the objects for which the institution was founded and no weakening in the active promotion of its aims. The experience of the past year indicates a renewed enthusiasm and a hopeful outlook for the future.

The various exhibitions have been, as usual, creditable to the Society and public interest has been fully up to the average of past years.

An important event of the year has been the unanimous adoption of a new system of government to go into effect January 1, 1904, superseding the present Constitution which in its main principles, at least, though with occasional revision and modification of details, has been the source of authority since 1835.

It is of interest to note that the new By-laws in which the management of the affairs of the Society is entrusted to a Board of Trustees, resembles in this respect the first constitution adopted in 1829.

The publications of the Society have been brought up to date during the year with the exception of the Accessions to the Library, issued as Part III of the Transactions. These are now

six years in arrears and the value of their continued publication is somewhat doubtful. The titles and dates of issue of the publications of the year are as follows:

January 3.	The Schedule of Exhibitions and prizes,	48	pages.
February 16.	Transactions, 1902, Part I,	110	"
" 16.	Transactions, 1897, Part III, containing the accessions to the library for that year,	57	"
July 6.	Transactions, 1902, Part II, with 23 plates,	200	"
" 7.	Transactions, 1903, Part I, with one plate,	156	"

Numerous specimens of fruits and flowers have been brought in for identification, all of which have received attention and, with the assistance at times of members of the fruit and flower committees, most of them have been satisfactorily named.

Concerning the library much might be said of its condition and needs which would be but a repetition of previous reports. Its claims upon the society and its value in its work are so apparent that confidence is assumed that it will be properly taken care of. The income of the John S. Farlow Fund ($100) and of the John D. Williams French Fund ($200) has been expended in the purchase of books, while the society's appropriation ($225) has been used for the maintenance of the periodical list and for binding.

On June 26 there was received from the family of the late Robert Manning a large number of books and pamphlets, among which were some desirable additions to the library, especially of numbers of serial publications and reports needed towards the completion of sets.

The preparation of a list of the duplicate material has been undertaken during the year and is nearly completed, thereby rendering accessible for sale or exchange a large number of publications which have been accumulating for years. By this means many additions to the library can economically be made.

In the absence of a report from the Library Committee a list of some of the more important accessions to the library during the year is appended.

BUDD. American Horticultural Manual. Parts I, II.
COGNIAUX ET GOOSENS. Dictionnaire Iconographique des Orchidées. Parts 48–50.
COLLINS, HOLDEN AND SETCHELL. Phycotheca Boreali-Americana. Fasc. 21, 22.
EARLE. A Third Pot-Pourri.
ELY. A Woman's Hardy Garden.
FERNOW. Economics of Forestry.
FLORA BATAVA. Parts 337–344.
FLORILEGIUM HARLEMENSE. Part 20, completing the work.
FOX. Tree Planting on Streets and Highways.
GALLOWAY. Commercial Violet Culture. 2d. Ed.
GOING. With the Trees.
HILLEBRAND. Flora of the Hawaiian Islands.
HOOKER. Journal of a Tour in Iceland in the Summer of 1809.
KEELER. Our Northern Shrubs and how to identify them.
LEAVITT. Outlines of Botany.
LEYLAND. Gardens Old and New. Vol. 2.
LOCKE. Outlines of Botany. Boston 1819.
LYON. Repulse Bay. London 1825.
MICHAEL. Führer für Pilzfreunde.
NEWELL. Irrigation.
NICHOLS. English Pleasure Gardens.
PARKHURST. Trees, Shrubs and Vines of the Northeastern United States.
RABENHORST. Kryptogamen-Flora von Deutschland, Osterreich, und der Schweiz. 2te Aufl. IV Band, III Abtheilung, Lief. 38, 39.
RAFINESQUE Atlantic Journal and Friend of Knowledge.
REICHENBACH. Icones Floræ Germanicæ et Helveticæ. Tom 22, Decas. 31–33, Tom. 24, Decas. 1, 2.
ROBINSON C. M. Improvement of Towns and Cities.
ROBINSON, WM. Alpine Flowers for Gardens. 3d Ed.
ROTH. A First Book of Forestry.
SARGENT. Trees and Shrubs, Vol. I. Parts 1, 2, 3.
SMALL. Flora of the Southeastern United States.
TRIGGS. Formal Gardens in England and Scotland. Part III. 72 Plates.
URBAN. Symbolæ Antillanæ. Vol. III. Fasc. II.
WARD. The American Carnation.
WATERS. Ferns; A Manual for the Northeastern States.
WAUGH. Systematic Pomology.
WEED. The Flower Beautiful.
WHITE. The Forest.
WOOD. Natal Plants, Vol. 3. Part IV.

WILLIAM P. RICH,
Secretary and Librarian.

Necrology — 1903.

Franklin Gordon Dexter was born in Boston, December 19, 1824, and died there January 1, 1903. He became a life member of the Massachusetts Horticultural Society in 1865.

Mr. Dexter was prominent in the business and financial circles of Boston for many years. He first went into business in Mr. Austin's counting rooms and later became associated with and was a partner of Wm. Appleton & Co., China merchants. In connection with this firm he made two or three voyages to China and was among the first Americans who went to Japan after the treaty with that country in 1858. On the death of Mr. Appleton in 1862 he became a partner in the firm of Samuel Hooper & Co., successors of Wm. Appleton & Co., remaining until the death of Mr. Hooper, about 1875, when the firm was dissolved.

He took an active part in the building of the Union Pacific Railroad and had interests in other Western railroads which were being built at that period. These interests he continued until a few years before his death when he gradually retired from active business.

Mr. Dexter was instrumental in introducing into this country from Japan several notable plants. He brought over in 1861, in a Ward case, by Ship "Nabob" from Shanghai, *Lilium auratum*, the Golden Banded lily of Japan, which had been collected by Dr. George W. Hall. Francis L. Lee received it and turned it over to Spooner and Parkman who propagated it and exhibited it at the Massachusetts Horticultural Society, July 12, 1862, receiving therefor a Silver Medal. C. M. Hovey recognized it as a new species and suggested for it the name *Lilium Dexteri*. In the meantime it had been introduced by Veitch into England and

flowered about the same time as the American plants and was promptly named *Lilium auratum* by Lindley, antedating Hovey's name by a few weeks only.

Mr. Dexter brought over at the same time *Lonicera Japonica*, the Japan honeysuckle, *Ampelopsis tricuspidata*, the Japanese or Boston ivy, and *Malus Halliana*, now commonly known as Parkman's Crab and which stood until two years ago in Mr. Parkman's garden.

Prof. C. S. Sargent states that the origin of this last species is still uncertain and that no other specimen has since been sent to the United States or Europe from Japan; all the plants now in culti ation having been propagated from the one brought home by Mr. Dexter.

Included in Mr. Dexter's importation were *Rhododendron brachycarpum*, still a very rare plant in gardens, *Retinispora pisifera aurea* (probably the first in this country), and a tree now in Prof. Sargent's possession, *Thuyopsis dolobrata*. This last had been introduced into England some two or three years earlier by an English naval officer.

Prof. Sargent also states that so far as he knows this was the first importation of plants made directly from Japan to the United States.

By Gordon Dexter.

Frederick L. Harris of Wellesley, Massachusetts, died January 11, 1903. He became a member of the Society in 1865.

A memorial of his life was published in the Transactions for 1903, Part I, page 24.

William Henry Sherman was born in East Cambridge, Massachusetts, July 29, 1841, and died in Boston, January 11, 1903. He became a life member of the Society in 1899.

Mr. Sherman was a business man of large interests and a member of the firm of Parker, Wilder & Company of which Marshall P. Wilder of horticultural fame was also a partner.

MRS. REBECCA CAROLINE AMES was born in St. Louis, Missouri, December 30, 1838, and died in Boston, January 21, 1903. She became a life member of the Society in 1899. Mrs. Ames was the wife of the late Frederick L. Ames of North Easton, whose interest in horticulture and in the Massachusetts Horticultural Society is still held in pleasant remembrance.

GARDINER G. HAMMOND was born in Boston, on Beacon Hill, now a part of the State House grounds, November 19, 1832, and died at his home on Beacon Street, Boston, March 3, 1903. He became a life member of the Society in 1864. Mr. Hammond was never in any business but lived on the income of his invested, inherited property. About 1860 he bought at New London, Connecticut, four miles from the town, and on the shore of Long Island Sound, the country place of a Mr. Williams, an old whaling merchant of that town. Here he passed his summers with his family for many years, living in the winter in Boston. From year to year up to 1868 he continued to buy parcels of land adjacent to his estate until he had acquired about 250 acres. While he lived at Walnut Grove Farm (the name of the New London place) he engaged extensively in farming of all kinds as a gentleman farmer. He had very fine fruit, flower, and vegetable gardens, cultivating the land highly. He also raised cows, horses, pigs, chickens, and dogs and planted extensively trees and shrubs.
By GARDINER G. HAMMOND.

BENJAMIN GREY was born in Ayton, Yorkshire, England, August 7, 1846, and died in Malden, Massachusetts, March 5, 1903. He became a life member of the Society in 1887. A memorial of his life was given in the TRANSACTIONS for 1903, Part I, page 161.

OLIVER R. ROBBINS was born in Roxbury, Massachusetts, April 19, 1830, and died in Weston, March 5, 1903. He became a member of this Society in 1886.

His family moved to Weston in 1832. Mr. Robbins served a term as selectman of the town and was an active member of the committee on the public library for many years. He carried on farming in its various branches, making a specialty of strawberry

culture, and took great pleasure in exhibiting his products at the horticultural exhibitions of the Society, winning many first prizes as a reward for his skill.

By Samuel H. Warren.

Oren H. Peck, formerly a resident of Melrose, Massachusetts, died in Denver, Colorado, April 2, 1903.

He became a member of the Society in 1866 and, during the years 1865 to 1870, was a frequent exhibitor of flowers at its exhibitions and was the recipient of numerous prizes attesting his skill and interest in horticultural work. He was a member of the Committee on Flowers in 1866, and in 1869 was awarded a First Class Certificate of Merit for four new varieties of *Coleus*.

Although his last years were spent in a distant state he always held a lively interest in the Massachusetts Horticultural Society and looked back with sincere pleasure upon the former years of active work in the Society.

Charles U. Cotting was born in Boston, May 13, 1831, and died there April 3, 1903. He became a member of the Society in 1896.

Seth Weston was born in Duxbury, Massachusetts, November 9, 1824, and died in Revere, April 5, 1903. He became a life member of the Society in 1870.

At an early age he learned the trade of a mason and coming to Boston in 1844 entered the employ of Standish & Woodbury, contractors and builders, where he remained for twenty years, the last twelve of which as a foreman.

In 1865 he formed a partnership with George F. Shephard, under the firm name of Weston & Shephard. This partnership lasted about twenty years, during which the firm erected many public and private buildings in Boston and vicinity, notably the Museum of Fine Arts in Copley Square and the residence of the late Frederick L. Ames on Commonwealth Avenue.

He moved to Revere about 1870 and after retiring from business devoted himself to his real estate interests and took an active part in the public affairs of the town for twenty years.

His interest in horticulture was his "play." He was a hard worker at his business and when he came home from the city he sought recreation in his garden and among his trees. He employed very little outside assistance in caring for his orchard, preferring to labor himself when he could. All of his trees he set out himself or personally supervised the work. He was most successful with pears, although he had a variety of apple, plum, peach, and cherry trees, besides a great many grape vines.

He was a frequent exhibitor of his products at the exhibitions of the Massachusetts Horticultural Society in the 70s and received many prizes. He experimented somewhat with strawberries and at one time had the largest bed of Sharpless strawberries in Revere. His first orchard was on Mill Street, Revere, and his last on Proctor Avenue where he lived for eighteen years. After he himself ceased to exhibit, he took great pleasure in attending the exhibitions at Horticultural Hall and at other places. Some twenty years ago he took several quite extended journeys, going as far south as Florida and west to the "Rockies", and retained to the last the memory of the vegetation as he saw it in the different localities.

As he loved fruit so he loved animals. In disposition he was retiring, never seeking prominence, though at various times he occupied prominent positions entirely unsought. He detested vice of all kinds and his contempt for a dishonest person was of a most positive character. In his generosity he frequently went almost without necessities himself in order to help some other person or some "good cause."

His affections were deep though not demonstrative and when he died he left five children to revere his memory, and a record of a stainless, upright, and useful life.

By F. Irving Weston.

William Sumner Appleton was born in Boston, January 11, 1840, and died there April 28, 1903. He became a life member of the Society in 1867.

He owned an estate of 360 acres in Newton, Massachusetts, and was much interested in the cultivation of fruits and vegetables and especially of trees for which he had a great regard.

Mr. Appleton was a student of genealogical, numismatic, and heraldric subjects and a recognized authority upon them.

Hon. Virgil Chase Gilman was born in Unity, New Hampshire, May 5, 1827, and died in Nashua, April 28, 1903. He was admitted a member of the Society in 1896. Mr. Gilman was educated in the public schools of Lowell, Massachusetts, and moved to Nashua in 1843 where he resided ever after.

In 1851 he began the manufacturing of cards and glazed paper, being among the first in this country in that business, and continued up to 1873 when, his health failing, he bought a farm which he carried on for five years following. He was then chosen treasurer of the Nashua Savings Bank and continued as such for the next twenty years. He was elected mayor of the City of Nashua in 1865, and in 1879 was sent to represent one of the largest wards of the city in the State Legislature, serving as chairman of the committee on education of that body. In 1881 he was chosen state senator and as such was made chairman of the committee on judiciary, serving also on three other committees.

Always interested in matters pertaining to horticulture and agriculture he was an early member of the New Hampshire Agricultural Society of which he was a trustee for many years. He served also as a trustee of the New England Agricultural Society at the time the Hon. George B. Loring was its president. For the last twenty years he has owned and carried on the Riverside Farm containing 145 acres and located within a mile and a half of the City Hall in Nashua and directly opposite the U. S. Fish Hatching Station, which last named institution was formerly a part of his farm. As a student of pomology he was considered by those interested in that subject as one of the best posted in New Hampshire. His special interest for the last ten years was in strawberries and at the time of his decease he had some fifty varieties under cultivation, and some for trial that have not yet been placed on the market.

By C. W. Hoitt.

Frank W. Andrews was born in Boston, October 16, 1826, and died in Washington, May 5, 1903. He became a life member of the Society in 1858.

Mr. Andrews always made Boston his home until about fifteen years ago when he moved to Washington, making that city his winter home. For nearly forty years he had his summer residence at Newport, Rhode Island. He was a member of the Massachusetts Agricultural Club and was interested in agricultural and horticultural matters.

William Bowen Murphy was born in Cork, Ireland, May 12, 1854, and died in Boston, May 11, 1903. He became a life member of the Society in 1895. From early childhood he evinced a great love for the things of nature and, after a term of eight years in the army of the United States during which time he devoted his attention to the study of natural history, he took the complete course in botany at Harvard College. For some years thereafter he had charge of the Park Police of the City of Boston, still advancing his favorite study of plant life, and devoting every moment of his spare time thereto. While occupying this position he was awarded a medal by the Massachusetts Humane Society for saving the lives of three boys in the Back Bay Fens, May 29, 1892.

He was a frequent contributor to many of the Boston and New York newspapers, writing more frequently for the Boston Transcript. His articles written serially for the Roxbury Gazette during 1894 and 1895, as well as his articles in the Transcript on the Boston Park System and the Arnold Arboretum, received the highest encomiums. He had collected a rare assortment of pressed ferns and leaves from nearly all the public parks of Europe which attest more strongly than words his great interest in the principles and aims of the Massachusetts Horticultural Society.

By Rev. P. B. Murphy.

William Ellis Endicott was born in Canton, Massachusetts, on the old Endicott place, April 1, 1842, and died at his home there June 3, 1903. He joined the Massachusetts Horticultural Society in 1871.

Mr. Endicott was well known among his fellow-members in the Society as a botanist and horticulturist. He cultivated in his

greenhouses at Canton many rare and interesting plants. He was especially interested in bulbous and tuberous-rooted plants and he grew extensively gladioli, dahlias, tulips, etc. He was a frequent exhibitor at the Society's flower shows and many visitors were attracted to his grounds by the brilliant displays of these flowers, year after year. He became a member of the Library Committee in 1874 and was elected chairman of that committee in 1879, holding the position continuously until the summer of 1902 when, on account of failing health, he resigned.

His practical and scientific knowledge of botany and horticulture and his familiarity with foreign languages, added to his marked literary tastes, well fitted him for this position. His reports as chairman give a very full history of the conditions and growth of the library for this period of twenty-three years.

A paper of great interest to all who consult this library was presented before the Society by Mr. Endicott on March 12, 1892. It is entitled "The Library of the Massachusetts Horticultural Society" and is to be found in the TRANSACTIONS for that year.

He instituted the valuable Card Catalogue of Plates which supplements Pritzel's Iconum Botanicarum Index and spent a great deal of his leisure time at home in verifying and correcting the cards. This catalogue was begun in 1882 and now numbers many thousands of cards. The Card Catalogue of Books, suggested in his annual report for 1887, was begun in 1888.

He also supervised the expenditure of the Stickney Fund for twenty of the thirty years of its existence. The annual income from this fund was seven hundred dollars, to be used solely for the purchase of books, and Mr. Endicott continually studied the catalogues of booksellers, of this and of foreign countries, that this money might be wisely expended and that no volume needed for the library should be overlooked.

Besides his horticultural interests, Mr. Endicott was for many years head master of the Christopher Gibson School in Dorchester, beginning before Dorchester was annexed to Boston and continuing in that position until his death.

He was also a member of the Tenth Massachusetts Battery Association, having served three years in the Civil War in his

early manhood. At the battle of Ream's Station he was taken prisoner and confined for six weeks in Libby Prison.

Mr. Endicott was always fond of a quiet home life, was a great reader and student, and his evenings were almost invariably spent among his books.

By Miss C. M. Endicott.

Warren E. Eaton was born in North Reading, Massachusetts, January 7, 1839, and died in Reading, July 3, 1903. He became a member of the Society in 1893.

Mr. Eaton was for thirty-six years principal of the Harvard School, Charlestown. His recreation was in historical and horticultural work and he prepared the greater part of the memorial history of Reading published on the occasion of the 250th anniversary of the town in 1894. He was also interested in and a member of the Sons of the American Revolution.

David Boardman Flint was born in Troy, New Hampshire, May 1, 1816, and died in Boston, July 5, 1903. He became a life member of the Society in 1869.

Mr. Flint came to Boston in 1839 and a few years after engaged in the lumber business in which he was very successful.

On retiring from active business pursuits in 1869 he devoted the remainder of his life to many interests of a philanthropic and charitable nature. He was especially interested in agricultural matters in the state and was a member of the Massachusetts Agricultural Club.

Albert H. Hews was born in Weston, Massachusetts, January 13, 1844, and died there July 8, 1903. He became a life member of the Society in 1868.

Mr. Hews was well known to the floriculturists of the country through his connection with the manufacture of pottery at Cambridge. The Hews Pottery was established in the town of Weston some time prior to 1765 and ever since has been carried on by some member of the family, Albert H. Hews being the fourth generation from the founder of the pottery.

Mr. Hews was much interested in horticulture and his love of nature was strong, qualities which served as an incentive in his

efforts to produce in his business the very best that could be made for the special requirements of all kinds of plants. His home in Weston was a spot where floriculturists loved to linger.

CHARLES JACKSON DAWSON was born in Jamaica Plain, Massachusetts, October 17, 1871, and died there September 15, 1903. He became a member of the Society in 1896.

Mr. Dawson was born and educated in an environment of plants and plant culture and continued through life closely connected with such work.

After leaving school he took a course of instruction at the Bussey Institution of Harvard University and was for some years connected with the Boston Park Department.

He was for several years secretary of the Gardeners' and Florists' Club of Boston. He had recently entered into the nursery business on his own account and his early death brings to a close a life of much promise.

MRS. CELENDA SMITH HATCH was born in Whitefield, Maine, July 21, 1833, and died in Cambridge, Massachusetts, September 25, 1903. She became a life member of the Society in 1895.

Mrs. Hatch was a lover of the beautiful in the floral kingdom and took great delight in the exhibitions of the Society.

CHARLES E. GRANT was born in Boston, August 26, 1814, and died in Lynn, October 1, 1903. He became a member of the Society in 1847, during the presidency of Samuel Walker, and was one of the very few living members of that period.

Mr. Grant was engaged in the paper hanging business on Union Street, Boston, for thirty years and on retiring served on the board of assessors for eight or nine years.

He lived for the greater part of his life in Roxbury, serving for two years as alderman before its annexation to Boston. He was also a representative to the Legislature in 1853. He was a skilful cultivator of grapes, peaches, plums, and small fruits and made many contributions of his products to the exhibitions of the Society taking many prizes therefor. Between the years 1846 and 1894, forty-eight years, he rarely failed to be represented at

the exhibitions, a record of continuous interest probably unequaled in the history of the Society.

Mrs. Henrietta Louisa Tracy Wolcott was born in Boston, September 25, 1825, and died in Brookline, October 8, 1903.

She became a member of the Society in 1876 and at once entered into its work with an activity and enthusiasm that ceased only with her death.

Many other educational and philanthropical interests were also the objects of her untiring devotion, large sympathies, and helpful services and have been spoken as a memorial of her elsewhere and need not be repeated here.

In the year 1878 Mrs. Wolcott with a few other interested persons started a movement in the Society for the purpose of encouraging a practical taste for floriculture among the children of the city. The object in view was "to promote a love for flowers and their culture among those who have little or no opportunity to grow them except in windows".

The Window Gardening Committee of which she was chairman during the whole period of its existence continued its work until 1894 when its title was changed to the Committee on School Gardens and Children's Herbariums and a broader field of work was outlined in which she ever retained an active and helpful interest, continuing a member of the committee until her death.

She was earnest in the advocacy of nature studies in the public schools and lived to note with great satisfaction the wide-spread interest in the school garden movement in which she was one of the pioneers in this country.

To those privileged to have known Mrs. Wolcott personally, to have enjoyed her entertaining and instructive conversation, and to have felt the inspiration of her cheerful presence, her death comes as a real bereavement, brightened however, by many pleasing reminiscences.

Hon. John Edwards Russell was born in Greenfield, Massachusetts, January 20, 1834, and died in Leicester, October 28, 1903. He became a life member of the Society in 1881.

Mr. Russell was for many years a conspicuous personage in the business, political, and social life of his state and nation and a man of many and broad interests.

It is only, however, to the agricultural and horticultural side of his career that attention can be given in this memorial notice. His interest in these lines led him to accept the secretaryship of the Massachusetts State Board of Agriculture, a position to which he devoted much active and fruitful service in the years 1881 to 1887, filling the office to the great satisfaction of the farmers of the state. He was also a trustee of the State Agricultural College.

Himself practically interested in farming he took much pleasurable pride in his Leicester estate and in his horses, cattle, and sheep.

He was a man of lovable character as well as of business and political ability and one that adorned and elevated any undertaking into which he entered and he leaves a record of fruitful service in his day and generation.

William Henry White was born in Woburn, Massachusetts, October 26, 1829, and died in Pittsfield, New Hampshire, November 12, 1903. He became a member of the Society in 1890.

Mr. White was the senior member of the firm of White Brothers & Company, manufacturers of leather and had extensive factories in Lowell, Massachusetts, where he had resided since 1863. After having devoted the larger part of his life to business pursuits he retired in 1900 and engaged in fruit culture on an extensive scale in Pittsfield where he owned a farm of about one hundred acres. Here he set out 12,000 young trees, including the best known varieties of apples, as well as of plum and cherry trees. He had always a great interest in horticultural pursuits and was convinced that by the use of up-to-date methods it was possible to demonstrate that the farm lands of New Hampshire which were bringing in little or no revenue would be capable of returning a handsome profit on the investment.

He did not live to realize his expectations, as it will require five or six years to bring the trees to a growth sufficient to produce marketable quantities, but the enterprise will probably be continued by his sons.

By H. Kirke White.

GEORGE ORLANDO SMITH was born in Lexington, Massachusetts, January 5, 1832, and died at his temporary home in Somerville, November 16, 1903. He became a member of the Society in 1865.

Mr. Smith belonged to one of Lexington's old families and was one of the leading citizens of that historic town. He was greatly interested in and thoroughly informed as to its history and was one of the founders and a president of the Lexington Historical Society and also had been a selectman of the town.

He was much devoted to floriculture and had a fine garden at his Lexington home. He was especially interested in roses and at various times exhibited the products of his garden at the shows of the Society.

CHARLES W. GALLOUPE was born in Beverly, Massachusetts, September 5, 1825, and died in Boston, November 28, 1903. He became a life member of the Society in 1889.

Mr. Galloupe was actively engaged in business pursuits in Boston for many years.

He had a summer home in Swampscott with spacious grounds beautifully adorned with shrubbery and trees and, having a taste for horticulture, he took much pleasure in his greenhouses and gardens. In past years he frequently exhibited specimens of his cultivation at the Society's exhibitions.

AUGUSTUS FLAGG was born in Worcester, Massachusetts, January 17, 1818, and died in Boston, November 29, 1903. He become a life member of the Society in 1865.

Mr. Flagg was connected for nearly fifty years with the firm of Little, Brown & Company of Boston, publishers and booksellers. He owned a farm in Waltham and was much interested in horticultural and agricultural affairs.

PHILIP AUGUSTUS CHASE was born in Lynn, Massachusetts, November 14, 1834, and died in the same city, December 16, 1903. He became a member of the Society in 1894.

Mr. Chase was prominent in business and financial circles in Boston and Lynn, having been engaged in the leather business

and in shoe manufacturing in both cities. He was also active in public life and was especially interested in the subject of city parks and public reservations. He was a member of the Metropolitan Park Commission for several years, and was one of the trustees of Public Reservations, and chairman of the Lynn Park Commission. It was largely through his influence that the Lynn Woods and Revere Beach were secured for public pleasure grounds.

Ernst George Asmus was born in Hamburg, Germany, November 27, 1844, and died in West Hoboken, New Jersey, December 17, 1903. He became a life member of this Society in 1898.

From an humble beginning, with small capital, Mr. Asmus developed a large business in the growing of cut flowers, especially roses, carnations, and lilies of the valley. He achieved great success as a cultivator of roses, introducing to the trade the well-known varieties, Liberty, Souvenir du President Carnot, and Mme. Caroline Testout.

John R. Poor was born in Danvers, Massachusetts, in the year 1818, and died in Boston, December 18, 1903. He was a life member of this Society since 1859.

Mr. Poor was a prominent merchant of Boston, a member of the well-known firm of Stickney & Poor, dealers in spices.

He resided in the neighboring city of Somerville for many years, where he had a fine estate from which he often brought specimens of fruit to the exhibitions of the Society.

Moody Merrill was born in Campton, New Hampshire, June 27, 1836, and died in Silver City, New Mexico, December 24, 1903. He became a life member of the Society in 1889.

Mr. Merrill was largely interested in financial and real estate matters in Boston for the period between 1875 and 1885, especially in the development of what at the time were considered suburban properties. He established the once popular outdoor resort in Roxbury known as the Oakland Garden, but this as well as most of his other enterprises proved financially disastrous.

ISAAC GILBERT ROBBINS was born in Lynn, Massachusetts, November 26, 1835, and died in Cambridge, December 24, 1903. He became a life member of the Society in 1873.

WILLIAM DURANT was born in Boston, July 26, 1816, and died in the same city, December 31, 1903. He became a life member of the Society in 1864 and remained throughout the remainder of his life its constant friend and helper. Through the columns of the Boston Transcript, of which he was the business manager for sixty years, he rendered efficient and welcome service, always giving liberal space to the descriptions of the Society's exhibitions and to the reports of its business and educational meetings.

TREASURER'S REPORT

FOR THE YEAR 1903.

MASSACHUSETTS HORTICULTURAL SOCIETY, *in account current with*
CHARLES E. RICHARDSON, *December 31st, 1903.*

DR.

To amount paid for Furniture and Exhibition Ware					$476 65
" " " " Library, appropriated by Society			$225 00		
" " " from income of J. S. Farlow Fund			86 15		
" " " " income of J. D. Williams French Fund			136 42		
					447 57
" " " Interest on funds for prizes and other funds, credited opposite					2,074 72
" " " for Heating			1,876 89		
" " " " Lighting			756 28		
" " " " Water Rates			65 80		
" " " " Labor			1,778 88		
" " " " Stationery, Printing and Postage			2,626 05		
" " " " Insurance			370 68		
" " " " Incidentals			691 06		
" " " " Repairs			246 34		
" " " " Committee of Arrangements			225 00		
" " " " " on School Gardens and Children's Herbariums			18 80		
" " " " Committee on Lectures and Publications			200 00		
" " " " Committee on Forestry and Roadside Improvements			100 13		
Amounts carried forward			$8,955 91		$2,998 94

Amounts brought forward	$8,955 91	$2,998 94
To amount paid for Salaries of Treasurer, Secretary and Assistants .	4,000 00	
" " " " Salaries of Committees .	895 00	
" " " " Tax on Real Estate in South Boston	139 12	
" " " " Electric Power . . .	175 10	
" " " " Legal Services . . .	50 00	
" " " to Aaron Low	100 00	
" " " for Decorations for American Pomological Society's Convention . . .	100 00	
	———	14,415 13
" " " " *Prizes awarded in 1902*, viz.:		
Prizes for Plants	1,959 35	
" " Flowers	1,832 42	
" " Fruit	1,525 60	
" " Vegetables	1,171 35	
" " Gardens and Greenhouses .	330 67	
" " Native Plants	93 52	
" " School Gardens and Children's Herbariums . . .	55 41	
H. H. Hunnewell, Triennial Prize . .	160 00	
" " Prizes for Rhododendrons	105 00	
Edward Hatch, special prize . . .	50 00	
	———	7,283 32
		$24,697 39
Balance of Cash December 31, 1903 . .		15,531 02
		$40,228 41

CR.

By Balance of account rendered December 31, 1902 . .		$17,648 55
Received from Building 1903, use of Halls,	$2,238 00	
" " Annual Exhibitions $2,057 50		
Less Expenses, 1,562 56		
	494 94	
" " Admissions and Assessments	1,038 00	
" " Mount Auburn Cemetery .	5,011 70	
" " State Bounty . . .	600 00	
Amounts carried forward	9,382 64	17,648 55

Amounts brought forward		$9,382 64	$17,648 55
Received from Sales of Transactions . .		34 25	
" " Interest on Bonds,	$9,700 00		
" " " " Stock,	1,112 00		
" " " " Deposit in Bank . .	226 25		
		11,038 25	
" " Miss Sarah B. Fay, for Special Prize . . .		50 00	
" Interest *credited following Funds charged opposite:*			
Samuel Appleton Fund .	$50 00		
John A. Lowell " .	50 00		
Theodore Lyman " .	550 00		
Josiah Bradlee " .	50 00		
Benjamin V. French " .	25 00		
H. H. Hunnewell " .	200 00		
W. J. Walker " .	117 72		
Levi Whitcomb " .	25 00		
Benjamin B. Davis " .	25 00		
Marshall P. Wilder " .	50 00		
John Lewis Russell " .	50 00		
Francis Brown Hayes " .	500 00		
Henry A. Gane " .	50 00		
John S. Farlow " .	100 00		
J. D. Williams French " .	200 00		
Benjamin H. Pierce " .	32 00		
		2,074 72	
			22,579 86
			$40,228 41

CHARLES E. RICHARDSON,
Treasurer.

Approved:

WALTER HUNNEWELL, } *Finance*
HENRY P. WALCOTT, } *Committee.*

ASSETS, DECEMBER 31st, 1903.

Real Estate		$516,172 36
Furniture and Exhibition Ware		8,727 19
Library		41,749 19
Stereotype Plates and Copies of History		246 50
Chicago, Burlington & Quincy R. R. Bonds	$1,000 00	
Kansas City, Clinton & Springfield R. R. Bonds	1,980 00	
Lake Shore & Michigan Southern R. R. Bonds	10,415 25	
City of Newton Bonds	24,228 75	
Atchison, Topeka & Santa Fe R. R. Bonds	44,693 25	
Chicago, Burlington & Quincy, "Nebraska Extension," R. R. Bonds	50,012 50	
Chicago & West Michigan R. R. Bonds	9,987 50	
Kansas City, Fort Scott & Memphis Consols	27,523 75	
Chicago, Burlington & Quincy, "Illinois Division," R. R. Bonds	51,625 00	
Boston & Maine, R. R. Bonds	8,710 00	
West End Street Railway Bonds	5,162 50	
General Electric Co. Stock	10,082 00	
		245,420 50
W. A. Hayes and A. P. Loring, Trustees		3,488 76
Cash		15,531 02
		$831,335 52

LIABILITIES.

Prize and other Funds invested in bonds and stock:

Samuel Appleton	Fund,	$1,000 00
John A. Lowell	"	1,000 00
Theodore Lyman	"	11,000 00
Josiah Bradlee	"	1,000 00
Benjamin V. French	"	500 00
H. H. Hunnewell	"	4,000 00
W. J. Walker	"	2,354 43
Levi Whitcomb	"	500 00
Benjamin B. Davis	"	500 00
Marshall P. Wilder	"	1,000 00
John Lewis Russell	"	1,000 00
Amount carried forward		23,854 43

Amount brought forward	$23,854 43			
Francis Brown Hayes "	10,000 00			
Henry A. Gane "	1,000 00			
John S. Farlow "	2,515 77			
J. D. Williams French "	5,063 87			
Benjamin H. Pierce "	800 00			
		$43,234 07		
Prizes awarded in 1903, payable in 1904		6,250 00		
Miss Sarah B. Fay, Special Prize		50 00		
Kenneth Finlayson		60 00		
			$ 49,594 07	
Surplus			781,741 45	
			$831,335 52	

Membership of the Massachusetts Horticultural Society, December 31st, 1903.

Life Membership per last report	694		
Added in 1903	18		
Reinstated	2		
Commuted from Annual	1		
		715	
Deceased		29	
			686
Annual Membership per last report	189		
Added in 1903	14		
		203	
Commuted to Life	1		
Deceased	10		
Resigned	5		
Dropped for non-payment of assessments for two years	5		
		21	
			182
Present Membership			868

INCOME FROM MEMBERSHIP.

18 New Life Members @ $30	$540 00
1 Reinstated	20 00
1 Commuted to Life @ $20	20 00
14 New Annuals @ $10	140 00
Assessments	318 00
	$1,038 00

CHAS. E. RICHARDSON,
Treasurer.

AUDITOR'S CERTIFICATE.

28 State Street, Boston, February, 1st, 1904.

To the Finance Committee of the
Massachusetts Horticultural Society,

Gentlemen:— Having completed my audit of the books and general accounting affairs of the *Massachusetts Horticultural Society* for the year which ended with the 31st day of December, 1903, I herewith hand you my report of the same.

Report.

I added the ledger, journal and cash book and the small books tributary to the cash book, and saw that all balances were correctly carried forward. I examined and found adequate the vouchers representing the disbursements during the year, and found the amount of cash required by the cash book upon the first day of January, 1904, to have been on hand. I also inspected the securities of the Society in the custody of the Treasurer and they were in all instances in accordance with the requirements of the records. I traced all postings from the journal and cash book into the ledger and proved the correctness of the balance sheet taken from the ledger as of the 31st day of December, 1903, which is a true statement of the financial condition of the Society upon said date, to the best of my knowledge and belief.

In short, I satisfied myself that the work in connection with the accounting affairs of the Society was being conscientiously and honestly performed, and that there was every evidence of fidelity upon the part of the Treasurer.

Very respectfully yours,

ANDREW STEWART,

Examiner of Accounts.

Dr. *Massachusetts Horticultural Society in account with the Proprietors of the Cemetery of Mount Auburn.* **Cr.**

For Sales and Improvements within the Cemetery for the year ending December 31st, 1903.

To cost of filling up and improving land at Mount Auburn for the year ending December 31st, 1903, the Massachusetts Horticultural Society being charged with their proportion of same:				By Sales in January	$1,153 75
Rear of Walnut Avenue and Violet and Fern Paths.				" " " February	80 00
55.5 days, man	$124 88			" " " March	986 00
16.7 days, horse	62 63			" " " April	6,171 00
$\frac{3}{16}$ day, man and horse	1 57			" " " May	3,434 00
		$189 08		" " " June	850 00
Between Cherry and Magnolia Avenues.				" " " July	1,389 00
20.7 days, man	$ 46 58			" " " August	237 50
77.2 days, man and horse	289 50			" " " September	2,115 00
		$336 08		" " " October	533 75
Glen Avenue.				" " " November	2,616 50
16.4 days, man and horse		61 50		" " " December	1,410 00
		$586 66			$20,976 50
One-fourth of $586.66 is		$ 146 67		Net amount received from Receiving Tomb	1,259 00
Balance due Mass. Horticultural Society		5,011 70			$22,235 50
				Less graves repurchased $ 40 00	
				" lot " 162 00	
					202 00
					$22,033 50
				Deduct for Annual Expenses	1,400 00
					$20,633 50
		$5,158 37		One-fourth of $20,633.50 is	$5,158 37

E. and O. E.

BOSTON, December 31st, 1903.

JOHN L. DILL, *Treasurer.*

THE MASSACHUSETTS HORTICULTURAL SOCIETY

To the PROPRIETORS OF THE CEMETERY OF MOUNT AUBURN. *Dr.*

To cost of filling up and improving land at Mount Auburn for the year ending December 31st, 1903, the Massachusetts Horticultural Society being charged with their proportion of same.

Rear of Walnut Avenue and Violet and Fern Paths.

55.5 days, man	$124 88	
16.7 days, horse	62 63	
$\frac{3}{10}$ day, man and two horses	1 57	
		$189 08

Between Cherry and Magnolia Avenues.

20 7 days, man	$46 58	
77.2 days, man and horse	289 50	
		336 08

Glen Avenue.

16.4 days, man and horse	61 50
	$586 66
One-fourth of $586.66 is	$146 67

JAMES C. SCORGIE,
Supt. of Cemetery of Mt. Auburn.

BOSTON, December 31st, 1903.

I certify the foregoing to be a true copy of improvements for the year 1903 as rendered by the Superintendent.

JOHN L. DILL,
Treasurer.

Massachusetts Horticultural Society.

OFFICERS AND STANDING COMMITTEES FOR 1904.

President.

HENRY P. WALCOTT, M. D., OF CAMBRIDGE.

Vice-President. (for 2 years)
WALTER HUNNEWELL, OF BOSTON.

Vice-President. (for 1 year)
WARREN W. RAWSON, OF ARLINGTON.

Treasurer.
CHARLES E. RICHARDSON, OF BROOKLINE.

Secretary.
WILLIAM P. RICH, OF CHELSEA.*

Trustees. (for 3 years)

WILLIAM N. CRAIG, OF NORTH EASTON.
JOHN K. M. L. FARQUHAR, OF BOSTON.
CHARLES S. SARGENT, OF BROOKLINE.

Trustees. (for 2 years)

OAKES AMES, OF BOSTON.
ARTHUR H. FEWKES, OF NEWTON HIGHLANDS.
CHARLES W. PARKER, OF BOSTON.
WILLIAM H. SPOONER, OF JAMAICA PLAIN.

Trustees. (for 1 year)

ARTHUR F. ESTABROOK, OF BOSTON.
ROBERT T. JACKSON, OF CAMBRIDGE.
JOHN A. PETTIGREW, OF BOSTON.
MICHAEL SULLIVAN, OF REVERE.
ARTHUR D. HILL, OF BOSTON.

Nominating Committee.

WALTER C. BAYLIES, OF BOSTON.
WILLIAM H. ELLIOTT, OF BRIGHTON,
NATHANIEL T. KIDDER, OF MILTON.
RICHARD M. SALTONSTALL, OF BOSTON.
C. MINOT WELD, OF BOSTON.

*Communications to the Secretary, on the business of the Society, should be addressed to him at Horticultural Hall, Boston.

COMMITTEES FOR 1904.

Finance Committee.

WALTER HUNNEWELL, *Chairman.*
ARTHUR F. ESTABROOK, HENRY P. WALCOTT, M. D.

Committee on Prizes and Exhibitions.

J. K. M. L. FARQUHAR, *Chairman.*
W. N. CRAIG, A. H. FEWKES, W. W. RAWSON,
W. H. SPOONER, A. F. ESTABROOK.

Committee on Plants and Flowers.

ARTHUR H. FEWKES, *Chairman.*
WM. N. CRAIG, T. D. HATFIELD, ROBERT CAMERON,
JAMES WHEELER, WM. NICHOLSON, JOHN A. PETTIGREW.

Committee on Fruits.

E. W. WOOD *Chairman.*
CHARLES F. CURTIS, WARREN FENNO, J. WILLARD HILL, JOHN ASH

Committee on Vegetables.

MICHAEL SULLIVAN, *Chairman.*
WARREN H. HEUSTIS, AARON LOW, JOSHUA C. STONE,
WALTER RUSSELL.

Committee on Gardens.

CHARLES W. PARKER, *Chairman.*
DAVID F. ROY, JOHN A. PETTIGREW, W. W. RAWSON,
ARTHUR H. FEWKES, OAKES AMES, PATRICK NORTON,
HENRY P. WALCOTT, M. D.

Library Committee.

CHARLES S. SARGENT, *Chairman.*
SAMUEL HENSHAW, GEORGE E. DAVENPORT, CHARLES W. JENKS,
T. OTIS FULLER.

Committee on Lectures and Publication.

AARON LOW, *Chairman.*
JAMES H. BOWDITCH, E. W. WOOD, ROBERT. T. JACKSON,
EDWARD B. WILDER.

Committee on School Gardens and Native Plants.

HENRY L. CLAPP, *Chairman.*
KATHARINE W. HUSTON, WM. E. C. RICH, WM. P. RICH,
CHARLES W. JENKS, MISS MARY RODMAN, HENRY S. ADAMS.

HONORARY MEMBERS.

Members and correspondents of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Information, or any clew to it, is especially desired in regard to Joseph Maxwell, *elected in* 1830, *and* George W. Smith, *elected in* 1851.

Hon. George S. Boutwell, Groton.

Clarence H. Clark. Ex-President of the Pennsylvania Horticultural Society, Philadelphia.

Joseph Jefferson, Buzzard's Bay.

Major L. A. Huguet-Latour, M. P., Montreal, Canada.

Sir Trevor Lawrence, President of the Royal Horticultural Society, London.

Joseph Maxwell, Rio Janeiro, Brazil.

Donald G. Mitchell, New Haven, Conn.

Baron R. Von Osten Sacken, Heidelberg, Germany.

Samuel B. Parsons, Flushing, N. Y.

Dr. Henry S. Pritchett, President of the Massachusetts Institute of Technology, Boston.

George W. Smith, Boston.

Albert Vigee, President of the National Society of Horticulture of France, Paris.

Hon. James Wilson, Secretary of Agriculture, Washington, D. C.

CORRESPONDING MEMBERS.

Members and correspondents of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly reporting to the Secretary the needed corrections.

Information, or any clew to it, is especially desired in regard to Alexander Burton, *elected in* 1829; S. Reynolds, M.D., 1832; and Francis Summerest (or Summerer), 1833.

Édouard André, Editor-in-chief of the Revue Horticole, Paris, France.

George Francis Atkinson, Professor of Botany in Cornell University, Ithaca, N. Y.

Professor L. H. Bailey, Director of College of Agriculture, Cornell University, Ithaca, N. Y.

John Gilbert Baker, F. R. S., F. L. S., Kew, England.

Charles Baltet, Président de la Société Horticole, Vigneronne, et Forestière de l' Aube, Troyes, France.

Peter Barr, London, England.

Napoleon Baumann, Bolwiller, Alsace.

D. W Beadle, 307 Givens St., Toronto, Ontario.

Professor William J. Beal, Agricultural College, Michigan.

Prosper J. Berckmans, Ex-President of the American Pomological Society, Augusta, Georgia.

Charles E. Bessey, Ph. D , Professor of Botany in the Industrial College of the University of Nebraska, Lincoln.

Dr Ch Bolle, Berlin, Prussia.

Col. Gustavus B. Brackett, Pomologist to the United States Department of Agriculture, Washington, D. C.

Professor J. L. Budd, Ames, Iowa.

F. W. Burbidge, M.A., Trinity College Botanic Garden, Dublin, Ireland.

Alexander Burton, United States Consul at Cadiz, Spain, Philadelphia.

Rev. H. Honywood D'Ombrain, Westwell Vicarage, Ashford, Kent, England.

Sir W. T. Thiselton Dyer, K. C. M. G., F. R. S., Director of the Royal Botanic Gardens, Kew, England.

PARKER EARLE, President of the American Horticultural Society, Roswell, N. M.

GEORGE ELLWANGER, Rochester, N. Y.

H. J. ELWES, F. R. S., Colesborne, Cheltenham, England.

WILLIAM G. FARLOW, M.D., Professor of Cryptogamic Botany, Harvard University.

B. E. FERNOW, Forestry School, Cornell University, Ithaca, N. Y.

HON. ROBERT W. FURNAS, Ex-President of the Nebraska State Horticultural Society, Brownville.

BEVERLY T. GALLOWAY, Horticulturist and Superintendent of Gardens and Grounds of the United States Department of Agriculture, Washington, D.C.

CHARLES A. GOESSMANN, Ph.D., L.L.D., Chemist of the Hatch Experiment Station of the Massachusetts Agricultural College, Amherst.

GEORGE L. GOODALE, M.D., Professor of Botany, Harvard University, Cambridge.

HENRY H. GOODELL, President of the Massachusetts Agricultural College, Amherst.

OBADIAH B. HADWEN, President of the Worcester County Horticultural Society, Worcester.

PROFESSOR BYRON D. HALSTED, Botanist and Horticulturist at the New Jersey Agricultural Experiment Station, New Brunswick, N. J.

PROFESSOR CARL HANSEN, of the Royal College of Agriculture, Copenhagen, Denmark.

J. H. HART, Superintendent of the Botanic Garden, Trinidad.

DR. F. M. HEXAMER, Editor of the American Agriculturist, New York.

J. W. HOFFMANN, Colored State University, Orangeburg, S. C.

J. C. HOLDING, Ex-Treasurer and Secretary of the Cape of Good Hope Agricultural Society, Cape Town, Africa.

THE VERY REV. S. REYNOLDS HOLE, D.D., Dean of Rochester, Rochester, England.

SIR JOSEPH HOOKER, K.C.S.I., The Camp, Sunningdale, England.

JOSIAH HOOPES, West Chester, Pa.

SIR GEORGE KING, K.C.I.E., M.B., LL.D., F.R.S., Calcutta.

PROFESSOR WILLIAM R. LAZENBY, Department of Horticulture and Forestry; Secretary College of Agriculture and Domestic Science, Ohio State University, Columbus, O.

MAX LEICHTLIN, Baden-Baden, Germany.

VICTOR LEMOINE, Nancy, France.

DR. PETER MACOWAN, Government Botanist, Cape Town Herbarium, Cape Town, Africa.

DR. MAXWELL T. MASTERS, Editor of the Gardeners' Chronicle, London.

GEORGE MAW, Benthal, Kinley, Surrey, England.

T. C. MAXWELL, Geneva, N. Y.

F. W. MOORE, A.L.S., Curator of the Royal Botanic Gardens, Glasnevin, Dublin, Ireland.

SIR DANIEL MORRIS, C.M.G., D.Sc., M.A., F.L.S., Imperial Commissioner of Agriculture, Barbados.

GEORGE NICHOLSON, Kew, England.

PETER NØVIK, Secretary of the Norwegian Horticultural Society, Christiana.

WILLIAM PAUL, Waltham Cross, London, N.

PROFESSOR D P. PENHALLOW, Director of the Botanic Garden, Montreal, Canada.

P. T. QUINN, Newark, N. J.

CAVALIÈRE ENRICO, RAGUSA, Palermo, Sicily.

D. REDMOND, St. Nicholas, Florida

S. REYNOLDS, M.D., Schenectady, N. Y.

BENJAMIN LINCOLN ROBINSON, PH.D., Curator of the Gray Herbarium of Harvard University, Cambridge.

WILLIAM ROBINSON, Editor of Gardening Illustrated, London.

WILLIAM SALWAY, Superintendent of Spring Grove Cemetery. Cincinnati, O.

EDGAR SANDERS, Chicago, Ill.

WILLIAM R. SMITH, Superintendent of the Botanic Garden, Washington, D. C.

ROBERT W. STARR, Port William, N. S.

FRANCIS SUMMAREST,

WILLIAM TRELEASE, Director of the Missouri Botanic Garden, St. Louis.

DR. MELCHIOR TREUB, Director of the Botanic Garden, Buitenzorg, Java.

H. J. VEITCH, Chelsea, England.

WILLIAM WATSON, Curator of Royal Gardens, Kew, England.

PROFESSOR L. WITTMACK, Secretary of the Royal Prussian Horticultural Society, Berlin, Prussia.

MEMBERS FOR LIFE.

Members of the Society and all other persons who may know of deaths, changes in residence, or other circumstances showing that the following list is incorrect in any particular, will confer a favor by promptly communicating to the Secretary any needed corrections.

Information, or any clew to it, is especially desired in regard to members whose names are marked thus †.

Adams, Mrs. Charles Francis, South Lincoln.
Adams, Henry Saxton, Dorchester.
Alger, Rev. R. F., Dorchester.
Allen, Hon. Charles H., Lowell.
Allen, Thomas, Boston.
Ames, F. Lothrop, North Easton.
Ames, John S., North Easton.
Ames, Miss Mary S., North Easton.
Ames, Oakes, North Easton.
Ames, Oliver, North Easton.
Ames, Mrs. Oliver, Sr., North Easton.
Ames, Preston Adams, Washington, D. C.
Ames, Miss Susan E., North Easton.
Amory, C. W., Boston.
Amory, Frederick, Boston.
Anderson, Larz, Brookline.
Andrews, Charles L., Milton.
Andros, Milton, San Francisco, Cal.
Appleton, Francis H., Boston.
Arnold, Mrs. George Francis, Brookline.
Ash, John, Pomfret Centre, Conn.
Atkins, Edwin F., Belmont.
Ayer, James B., Boston.
Bailey, Jason S., West Roxbury.
Bailey, Robert M., Dedham.
Baker, Clifton P., Dedham.
Baker, James E., South Lincoln.
Ball, George H., Boston.
Banfield, Francis L., M. D., Worcester.
Barber, J. Wesley, Newton.
Barnard, James M., Boston.
Barnard, Robert M., Everett.
Barnes, Walter S., Boston.
†Barney, Levi C., Boston.
Barry, John Marshall, Boston.
Barry, William C., Rochester, N. Y.
Bartlett, Francis, Beverly.
Bartlett, Miss Mary F., Boston.
Bates, Miss Mary D., Ipswich.
Baylies, Walter C., Taunton.
Beal, Leander, Swampscott.
Becker, Frederick C., Cambridge.
Beckford, Daniel R., Jr., Dedham.
Beebe, E., Pierson, Boston.
Beebe, Franklin H., Boston.
Beebe, J. Arthur, Boston.
Bigelow, Albert S., Cohasset.

Bigelow, Joseph S., Cohasset.
Bigelow, Dr. William Sturgis, Boston.
Black, George N., Manchester.
Blake, Miss Anne, Brookline.
Blake, Mrs. Arthur W., Brookline.
Blake, Edward D., Boston.
Blake, Francis, Weston.
Blake, Frederick A., Rochdale.
Blanchard, John W., West Newton.
Bliss, William, Boston.
Boardman, Samuel M., Hyde Park.
Boardman, T. Dennie, Manchester.
Bolles, William P., M. D., Roxbury.
Bosler, Frank C., Carlisle, Penn.
Bowditch, Charles P., Jamaica Plain.
Bowditch, Ernest W., Milton.
Bowditch, James H., Brookline.
Bowditch, Nathaniel I., Framingham.
Bowditch, William E., Roxbury.
Bowker, William H., Boston.
Brackett, Cephas H., Brighton.
Breck, Joseph Francis, Allston.
Bremer, Mrs. John L., Manchester.
Bresee, Albert, Hubbardton, Vt.
Brewer, Francis W., Hingham.
Briggs, William S., Lincoln.
Brigham, William T., Honolulu, Hawaii.
Brooks, Henry, Lincoln.
Brooks, J. Henry, Boston.
Brooks, Lawrence, Groton.
Brooks, Peter C., Boston.
Brooks, Shepherd, Boston.
Brown, Alfred S., Jamaica Plain.
Brown, Edward J., Weston.
Brown, George Barnard, Brookline.
Brown, John M., Belmont.
Brown, Samuel N., Boston.
Burlen, William H., Boston.
Burnett, Harry, Southborough.
Burnham, John A., Wenham.
Buswell, Frank E., Brooklyn, N. Y.
Butler, Aaron, Wakefield.
Butler, Edward K., Jamaica Plain.

Cabot, Dr. Arthur T., Boston.
Cabot, George E., Boston.
Cains, William, South Boston.
Calder, Augustus P., Dorchester.
Cameron, Robert, Cambridge.
Campbell, Francis, Cambridge.
Capen, John, Boston.
Carlton, Samuel A., Boston.
Carr, Hon. John, Roxbury.
Carter, Charles N., Needham.
Carter, Miss Maria E., Woburn.
Cartwright, George, Dedham.
Casas, W. B. de las, Malden.
Chadbourne, Marshall W., East Watertown.
Chaffin, John C., Newton.
Chamberlain, Chauncy W., Boston.
Chapman, John L., Hingham.
Chase, Daniel E., Somerville.
Cheney, Mrs. Elizabeth S., Wellesley.
Choate, Charles F., Southborough.
Christie, William, Everett.
Claflin, Hon. William, Newtonville.
Clapp, Edward B., South Boston.
Clapp, James H., South Boston.
Clapp, William C., South Boston.
Clark, Benjamin C., Boston.

Clark, B. Preston, Cohasset.
Clark, Miss Eleanor J., Pomfret Centre, Conn.
Clark, J. Warren, Millis.
Clarke, Miss Cora H., Boston.
Clarke, Eliot C., Boston.
Clough, Micajah Pratt, Lynn.
Cobb, John C., Milton.
Coburn, Isaac E., Everett.
Codman, James M., Brookline.
Codman, Ogden, South Lincoln.
Coe, Miss Mary Alma, Boston.
Coffin, Abraham B., Winchester.
Cogswell, Edward R., Jr., Cambridge.
Cole, Edward E., Boston.
Collamore, Miss Helen, Boston.
Colton, Samuel H., Worcester.
Comley, Norris F., Lexington.
Converse, Elisha S., Malden.
Converse, Col. H. E., Malden.
Coolidge, Harold J., Boston.
Coolidge, Joshua, Mount Auburn.
Coolidge, J. Randolph, Chestnut Hill.
Coolidge, Mrs. J. Randolph, Chestnut Hill.
Coolidge, T. Jefferson, Jr., Boston.
Cottle, Henry C., Boston.
Cox, Thomas A., Dorchester.
Coy, Samuel I., Boston.
Craig, William Nicol, North Easton.
Crane, Zenas, Dalton.
Crawford, Dr. Sarah M., Roxbury.
Crocker, Hon. George G., Boston.
Crocker, Miss S. H., Boston.
Crosby, George E., West Medford.
Cross, Alfred Richard, Nantasket.
Crowell, Randall H., Watertown.
Curtis, Charles F., Jamaica Plain.
Curtis, Charles P., Swampscott.
Curtis, Charles P., Jr., Boston.
Cushing, Livingston, Weston.
Cushing, Robert M., Boston.
Cutler, Judge Samuel R., Revere.
Cutting, Gen. Walter, Pittsfield.

†Daggett, Henry C., Boston.
Dalton, Charles H., Beverly.
Daly, John C., Roxbury.
Damon, Frederick W., Arlington.
Dana, Charles B., Wellesley.
Daniels, Dr. Edwin A., Boston.
Davenport, Albert M., Watertown.
Davenport, George E., Medford.
Davis, Arthur E., Wellesley.
Davis, Mrs. Arthur E., Wellesley.
Davis, Edward L., Worcester.
Davis, L. Shannon, Brookline.
Dawson, Jackson T., Jamaica Plain.
Dee, Thomas W., Cambridge.
Denny, Clarence H., Boston.
Denton, Eben, Dorchester.
Dexter, George, Beverly.
Dike, Charles C., Stoneham.
Doane, Edgar Howard, Wenham.
Doliber, Thomas, Brookline.
Donald, William, Cold Spring Harbor, N. Y.
Donaldson, James, Roxbury.
Dorr, George, Dorchester.
Dove, George W. W., Andover.
Dowse, William B. H., West Newton.
Draper, Hon. Eben S., Hopedale.
Draper, George A., Hopedale.
Dreer, William F., Philadelphia, Pa.
Dumaresq, Herbert, Chestnut Hill.
Duncan, James L., New York, N. Y.

Dunlap, James H., Nashua N. H.
Durfee, George B., Fall River.
Dutcher, Frank J., Hopedale.
Dwight, Theodore F., Kendal Green.
Dyer, Herbert H., Cambridge.

Eaton, Horace, Cambridge.
Edgar, William W., Waverley.
Eldredge, H. Fisher, Boston.
Elliot, Mrs. John W., Boston.
Elliott, William H., Brighton.
Ellsworth, J. Lewis, Worcester.
Endicott, William, Boston.
Endicott, William, Jr., Boston.
Endicott, William C., Jr., Danvers.
Estabrook, Arthur F., Boston.
Ewell, Warren, Dorchester.
Fabyan, George F., Brookline.
Fairchild, Charles, New York, N. Y.
Falconer, William, Pittsburg, Pa.
Farlow, Lewis H., Cambridge.
Farnsworth, Mrs. William, Dedham.
Farquhar, James F. M., Roslindale.
Farquhar, John K. M. L., Roxbury.
Farquhar, Robert, North Cambridge.
Faxon, John, Quincy.
Fay, H. H., Woods Hole.
Fay, Joseph S., Jr., Woods Hole.
Fenno, L. Carteret, Boston.
Fessenden, George B., Allston.
Fewkes, Arthur H., Newton Highlands.
Finlayson, Kenneth, Brookline.
Fisher, Peter, Ellis.
Fletcher, George V., Belmont.
Fletcher, J. Henry, Belmont.
Fletcher, John W., Chelsea.
Foster, Charles H. W., Brookline.
Foster, Francis C., Cambridge.
Fottler, John, Jr., Dorchester.
Fowle, George W., Jamaica Plain.
French, Miss Caroline L. W., Boston.
French, S. Waldo, Jamaica Plain.
French, W. Clifford, Newton.
Frohock, Roscoe R., Malden.
Frost, Harold L., Arlington.
Frost, Irving B., Belmont.
Frost, Varnum, Arlington.

Gardner, Mrs. Augustus P., Hamilton.
Gardner, George A., Boston.
Gardner, George P., Boston.
Gardner, John L., Boston.
Gardner, Mrs. John L., Brookline.
Gardner, William Amory, Groton.
Gaston, William A., Boston.
Gibbs, Wolcott, M. D., Newport, R. I.
Gill, George B., Medford.
Gillard, William, Dorchester.
Gilmore, E. W., North Easton.
Gilson, F. Howard, Wellesley Hills.
Goddard, Joseph, Sharon.
Goodell, L. W., Dwight.
Gowing, Mrs. Clara E., Kendal Green.
Gray, James, Wellesley.
Gray, Mrs. John C., Boston.
Gregory, Hon. James J. H., Marblehead.
Grew, Edward S., Boston.

Hadwen, Obadiah B., Worcester.
Hale, James O., Byfield.
Hall, Edwin A., Cambridgeport.

Hall, George A., Chelsea.
Hall, Jackson E., Cambridge.
Hall, Osborn B., Malden.
Hall, William F., Brookline.
Halliday, William H., South Boston.
Hammond, George W., Boston.
†Harding, George W., Arlington.
Harding, Louis B., Chestnut Hill.
Hardy, F. D., Cambridgeport.
Hargraves, William J., Jamaica Plain.
Harlow, James F., Quincy.
Harris, Charles, Cambridge.
Harris, Thaddeus William, A. M., Keene, N. H.
Hartshorn, Arthur E., Worcester.
Harwood, George Fred, Newton.
Haskell, Edwin B., Auburndale.
Hastings, Levi W., Brookline.
Hatch, Edward, Boston.
Haven, Franklin, Boston.
Hawken, Mrs. Thomas, Rockland, Me.
Hayward, George P., Chestnut Hill.
†Hazeltine, Hazen, Boston.
Hellier, Charles E., Boston.
Hemenway, Augustus, Canton.
Hemenway, Mrs. Augustus, Canton.
Henshaw, Joseph P. B., Boston.
Henshaw, Samuel, Cambridge.
Heurlin, Julius, South Braintree.
Hewett, Miss Mary C., Canton.
Higginson, Francis L., Boston.
Higginson, Mrs. Henry L., Boston.
Hilbourn, A. J., Boston.
Hill, John, Stoneham.
Hittinger, Jacob, Mt. Auburn.
Hoar, Samuel, Concord.
Hodgkins, John E., Portsmouth, N. H.
Holtt, Hon. Charles W., Nashua, N. H.
Hollingsworth, Amor L., Milton.
Hollingsworth, Z. T., Boston.
Hollis, George W., Allston.
Holmes, Edward J., Boston.
Holt, Gustavus C., Belmont.
Holt, Mrs. Stephen A., Cambridge.
Holt, William W., Winchester.
Hooper, Mrs. Robert C., Boston.
Hooper, William, Boston.
Horner, Mrs. Charlotte N. S., Georgetown.
Horsford, Miss Kate, Cambridge.
Hosmer, Oscar, Wenham.
Hovey, Charles H., South Pasadena, Cal.
Hovey, Stillman S., Woburn.
Howard, Joseph W., Somerville.
Hubbard, Charles Wells, Weston.
Hubbard, James C., Everett.
Humphrey, George W., Dedham.
Hunnewell, Arthur, Wellesley.
Hunnewell, Henry Sargent, Wellesley.
Hunnewell, Walter, Wellesley.
Hunt, Dudley F., Reading.
Hunt, Francis W., Melrose.
Hunt, Franklin, Charlestown, N. H.
Hunt, William H., Concord.

Jack, John George, Jamaica Plain.
Jackson, Charles L., Cambridge.
Jackson, Robert T., Cambridge.
James, Ellerton, Nahant.
James, Mrs. Ellerton, Nahant.
James, George Abbot, Nahant.
Janvrin, William S., Revere.
Jeffries, William A., Boston.
Jenks, Charles W., Bedford.
Johanssohn, Emil, Brookline.
Johnson, J. Frank, Malden.

Jones, Jerome, Brookline.
Jones, Dr. Mary E., Boston.
Jordan, Eben D., Boston.
Jordan, Henry G., Brookline.
Jose, Edwin H., Cambridgeport.

Kakas, Edward, West Medford.
Kellen, William V., Marion.
Kelley, George B., Jamaica Plain.
Kendall, D. S., Woodstock, Ont.
Kendall, Edward, Cambridgeport.
†Kendall, Joseph R., San Francisco, Cal.
Kendall, Dr. Walter G., Atlantic.
Kendrick, Mrs. H. P., Boston.
Kennedy, George G., M. D., Roxbury.
Kent, John, Chestnut Hill.
Keyes, John M., Concord.
Kidder, Charles A., Southborough.
Kidder, Nathaniel T., Milton.
Kimball, David P., Boston.
King, D. Webster, Boston.
Kingman, Abner A., Brookline.
Kingman, C. D., Middleborough.
Kinney, H. R., Worcester.
Knapp, Walter H., Newtonville.

Lamb, Horatio A., Milton.
Lancaster, Charles B., Boston.
Lanier, Charles, Lenox.
Lawrence, Amory A., Boston.
Lawrence, Amos A., Boston.
Lawrence, James, Groton.
Lawrence, John, Groton.
Lawrence, Rt. Rev. William, Boston.
Learned, Charles A., Arlington.
Lee, Daniel D., Jamaica Plain.
Lee, Francis H., Salem.
Lee, George C., Newton.
Leeson, Hon. Joseph R., Newton Centre.
Leighton, George B., Monadnock, N. H.
Lemme, Frederick, Charlestown.
Leuchars, Robert B., Dorchester.
Libby, Charles W., Medford.
Lincoln, George, Hingham.
Lincoln, Col. Solomon, Boston.
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Little, John Mason, Swampscott.
Locke, Edwin F., West Medford.
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Lockwood, Rhodes, Boston.
Lodge, Richard W., Boston.
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Loomis, Elihu G., Bedford.
Loring, Augustus P., Beverly.
Loring, Mrs. William Caleb, Beverly.
Lathrop, William S. H., Boston.
Low, George D., Boston.
†Lowder, John, Watertown.
Lowell, Abbott Lawrence, Boston.
Lowell, Miss Amy, Brookline.
Lowell, James A., Chestnut Hill.
Lowell, John, Newton.
Luke, Otis H., Brookline.
Lumb, William, Boston.
Lunt, William W., Hingham.
Lyman, George H., Wareham.
Lyman, Mrs. Theodore, Brookline.

Mabbett, George, Plymouth.
McCarty, Timothy, Providence, R. I.
Mackie, George, M. D., Attleboro.
McWilliam, George, Whitinsville.
†Mahoney, John, Boston.
Mallett, E. B., Jr., Freeport, Me.
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Manning, J. Woodward, Reading.

Manning, Mrs. Lydia B., Reading.
Manning, Warren H., Brookline.
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Marshall, Frederick F., Everett.
Marston, Howard, Boston.
Mason, Miss Ellen F., Boston.
Mason, Col. Frederick, Taunton.
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Matthews, Nathan, Boston.
Matthews, Nathan, Jr., Boston.
May, Frederick W. G., Boston.
Melvin, George, South Framingham.
Melvin, James C., West Newton.
Merriam, Charles, Boston.
Merriam, Herbert, Weston.
Metivier, James, Cambridge.
Milmore, Mrs. Joseph, Washington, D. C.
Minot, Charles S., Milton.
Mitton, Edward J., Brookline.
Mixter, George, Boston.
Monteith, David, Dedham.
Montgomery, Alexander, Natick.
Montgomery, Alexander, Jr., Natick.
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Morgan, George H., New York, N. Y.
Morse, John T., Jr., Boston.
Morse, Robert M., Jamaica Plain.
Morton, James H., Mattapan.
Moseley, Charles H., Roxbury.
Motley, E. Preble, Boston.
Mudge, George A., Portsmouth, N. H.
Murdock, Albert L., Boston.
Murray, Peter, Fairhaven.
Mutch, John, Newtonville.

Nevins, Mrs. David, Methuen.
Newman, John R., Winchester.
Newton, Rev. William W., Pittsfield.
Nickerson, Mrs. George A., Dedham.
Norton, Charles W., Allston.
Norton, Edward E., Boston.

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Orpet, Edward O., South Lancaster.

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Parkman, Henry, Boston.
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Peabody, Francis H., Boston.
Peabody, George A., Danvers.
Peabody, John E., Salem.
Peabody, S. Endicott, Salem.
Peck, William G., Arlington.
Pierce, Miss Marion W., Topsfield.
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Pfaff, Col. Charles, South Framingham.
Phillips, John C., North Beverly.
Phillips, Mrs. John C., North Beverly.
Phillips, William, North Beverly.
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Pierce, Elisha N., Waltham.
Pierce, George Francis, Neponset.
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Quinby, Hosea M., M. D., Worcester.

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Rand, Oliver J., Cambridgeport.
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Rawson, Warren W., Arlington.
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Raymond, Walter, Boston.
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Reardon, John B., Boston.
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Richardson, Charles E., Brookline.
Richardson, Dr. William L., Boston.
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Ripley, Ebed L., Hingham Centre.
Robb, Russell, Concord.
Robinson, John, Salem.
Robinson, Joseph B., Dorchester.
Roffe, Albert H., Newton Centre.
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Rogers, Mrs. Jacob C., Peabody.
Roland, Thomas, Nahant.
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Roy, David Frank, Malden.
Ruddick, William H., M. D., South Boston.
Russell, George, Woburn.
Russell, James S., Milton.
Russell, Walter, Arlington.

Salisbury, William C. G., Brookline.
Saltonstall, Richard M., Chestnut Hill.
Sanford, Oliver S., Wellesley.
Sanger, Mrs. George P., Boston.
Sargent, Andrew Robeson, Brookline.
Sargent, Charles S., Brookline.
Sargent, Mrs. Charles S., Brookline.
Sargent, Charles Sprague, Jr., Brookline.
Sargent, Mrs. Francis W., Wellesley.
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†Scott, Charles, Newton.
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Sears, Miss Emily E., Boston.
Sears, Dr. Henry F., Boston.
Sears, J. Montgomery, Boston.
Sears, Mrs. J. Montgomery, Boston.

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Siebrecht, H. A., New Rochelle, N. Y.
Simpkins, Miss Mabel, Yarmouth.
Skinner, Francis, Boston.
Skinner, Francis, Jr., Dedham.
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Smith, Archibald, West Somerville.
Smith, Calvin W., Wellesley Hills.
Smith, Charles H., Newton Highlands.
Smith, Charles S., Lincoln.
Smith, Edward N., San Francisco, Cal.
Smith, Thomas Page, Waltham.
Snow, Eugene A., Melrose.
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Souther, Charles H., Jamaica Plain.
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Spooner, William H., Jamaica Plain.
Sprague, Isaac, Wellesley Hills.
Springall, George, Malden.
Stearns, Charles H., Brookline.
Stearns, Frank W., Newton.
Stedman, Henry R., M. D., Roslindale.
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Stone, George F., Chestnut Hill.
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Strong, William C., Waban.
Sturgis, Richard Clipston, Boston.
Swain, Charles E., Roxbury.
Sweet, Everell F., Malden.

Taylor, Charles H., Boston.
Taylor, Horace B., Portland, Me.
Temple, Felker L., Boston.
Tenney, C. H., Methuen.
Thatcher, William, Brookline.
Thayer, Mrs. Alice R., Boston.
Thayer, Bayard, Lancaster.
Thayer, Mrs. Bayard, Lancaster.
Thayer, Eugene V. R., South Lancaster.
Thayer, Mrs. Eugene V. R., South Lancaster.
Thayer, Henry J., Boston.
Thayer, John E., South Lancaster.
Thayer, Mrs. John E., South Lancaster.
Thayer, Nathaniel, Lancaster.
Thayer, Mrs. Nathaniel, Lancaster.
Thayer, S. V. R., Boston.
Thiemann, Hermann, Owasso, Mich.
Thomas, W. B., Manchester.
Thurlow, Thomas C., West Newbury.
Tilton, Stephen W., Allston.
Tolman, Benjamin, Concord.
Tolman, Miss Harriet S., Boston.
Toppan, Roland W., Malden.
Torrey, Everett, Charlestown.
Tower, Miss Ellen May, Lexington.

Tower, Mrs. Helen M., Cambridge.
Tower, Sylvester, Boston.
Travis, Charles B., Brighton.
Trepess, Samuel J., Glencove, L. I., N. Y.
Tucker, Lawrence, Boston.

Underwood, Loring, Belmont.

Vander-Woerd, Charles, Waltham.
Vaughan, William Warren, Boston.
Vinal, Miss Mary L., Somerville.

Wakefield, E. H., Cambridge.
Walcott, Henry P., M. D., Cambridge.
Waldo, C. Sidney, Jamaica Plain.
Wales, George O., Braintree.
Walker, Miss Mary Sophia, Waltham.
Walsh, Michael H., Woods Hole.
Waltham, George C., Dorchester.
Walton, Daniel G., Wakefield.
Warburton, Chatterton, Fall River.
Ward, Francis Jackson, Roxbury.
Ward, John, Newton Centre.
Ware, Benjamin P., Clifton.
Ware, Miss Mary L., Boston.
Warren, Samuel D., Dedham.
Washburn, Andrew, Hyde Park.
Watson, Benjamin M., Jamaica Plain.
Watson, Thomas A., East Braintree.
Watts, Isaac, Waverley.
Webster, Hollis, Cambridge.
Welch, David, Dorchester.
Welch, Edward J., Dorchester.
Weld, Christopher Minot, Readville.
Weld, George W., Boston.
Weld, Richard H., Boston.
Weld, Gen. Stephen M., Dedham.
West, Mrs. Maria L., Neponset.
Wheeler, Frank, Concord.
Wheeler, James, Brookline.
Wheeler, Wilfred, Concord.
Wheelwright, A. C., Brookline.
Wheelwright, Edmund M., Boston.
Whitcomb, William B., Medford.
White, Mrs. Charles T., Boston.
White, Francis A., Brookline.
White, George R., Boston.
White, Joseph H., Brookline.
Whitney, Arthur E., Winchester.
Whitney, Ellerton P., Milton.
Whitney, Henry M., Cohasset.
Whittier, George E., Groton.
Whittier, William Benjamin, South Framingham.
Wigglesworth, George, Milton.
Wilbur, George B., Woods Hole.
Wilder, Edward Baker, Dorchester.
Wilder, Henry A., Malden.
Willard, E. W., Newport, R. I.
Willcutt, Levi L., Brookline.
Williams, Miss Adelia Coffin, Roxbury.
Williams, Benjamin B., Boston.
Williams, Henry Bigelow, Boston.
Williams, John Davis, Boston.
Williams, Philander, Taunton.
Wilson, Col. Henry W., Boston.
Wilson, William Power, Boston.
Winthrop, Robert C., Jr., Boston.
Wood, William K., West Newton.
Wright, George C., West Acton.
Wright, John G., Brookline.
Wyman, Oliver B., Shrewsbury.
Wyman, Windsor H., North Abington.

ANNUAL MEMBERS.

Members of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Alles, William H., Chestnut Hill.
Anderson, George M., Milton
Atkinson, Miss Caroline P., Brookline.
Atkinson, Edward, Brookline.
Ayres, Miss Helen F., Medford.

Bangs, Francis R., Boston.
Barker, John G., South Bend, Ind.
Barr, John, Wellesley.
Bigelow, Arthur J., Eastlake, Worcester.
Bigelow, Mrs. Nancy J., Southborough.
Bird, John L., Dorchester.
Blackmur, Paul R., Quincy.
Blomberg, Carl, North Easton.
Boyden, Clarence F., Taunton.
Bradley, Miss Abby A., Hingham.
Braman, George H., Newton.
Breck, Charles H., Newton.
Breed, Edward W., Clinton.
Bullard, John C., Cambridge.
Butler, Edward, Wellesley.

Cabot, Miss Mabel, Brookline.
Carpenter, Frank O., West Roxbury.
Chase, Joseph S., Malden.
Child, Stephen, Auburndale.
Chubbuck, Isaac Y., Roxbury.
Clapp, Henry L., Roxbury.
Clark, John W., North Hadley.
Clark, Joseph, Manchester.
Clark, Theodore M., Newtonville.
Clinkaberry, Henry T., Trenton, N. J.
Collins, Frank S., Malden.
Coolidge, Dr. Sumner, Watertown.
Cotter, Lawrence, Danville, Pa.
Crosby, J. Allen, Jamaica Plain.
Curtis, Joseph H., Boston.
Curtis, Louville, Tyngsborough.

Davis, Frederick S., West Roxbury.
Derby, William H., Revere.
Dolbear, Mrs. Alice J., College Hill.
Dorr, George B., Boston.
Doyle, William E., Cambridge.
Duffley, Daniel, Brookline.
Duncan, John W., West Roxbury.

Eastman, Edmund C., Brookline.
Endicott, Miss Charlotte M., Canton.
Eustis, William Tracy, Brookline.
Evans, Frank H., Malden.
Ewell, Marshall F., Marshfield Hills.

Farlow, Mrs. William G., Cambridge.
Fenno, Warren, Revere.
Fisher, Sewell, Boston.
Fiske, Harry E., Wollaston.
Fitzgerald, Desmond, Brookline.
Fletcher, Fred W., Auburndale.
Forbes, William H., Jamaica Plain.
Foster, Lucius H., Dorchester.
Francis, George E., M. D., Worcester.
Freeman, Miss Harriet E., Boston.
Fuller, T. Otis, Needham.

Garthley, James, Fairhaven.
Gill, Mrs. E. M., Medford.
Grew, Henry Sturgis, Boston.
Grey, Robert Melrose, Belmont, Cuba.
Grey, Thomas J., Chelsea.

Hall, Stacy, Boston.
Hallstram, Charles W., West Somerville.
Ham, Fernald E., Burlington.
Harrison, C. S., York, Nebraska.
Harrison, Thomas, Melrose Highlands.
Hartwell, Samuel, Lincoln.
Hatfield, T. D., Wellesley.
Hawes, Cyrus Alger, Brookline.
Herff, B. van, New York, N. Y.
Heustis, Warren H., Belmont.
Hildreth, Miss Ella F., Lowell.
Hill, Arthur Dehon, Boston.
Hill, J. Willard, Belmont.
Hinds, Warren D., Townsend.
Hollis, George, South Weymouth.
Houghton, George S., West Newton.
Hovey, Charles L., Waban.
Howden, Thomas, Whitinsville.
Hubbard, Allen, Newton Centre.
Hubbard, F. Tracy, Cambridge.
Huston, Miss Katharine W., Jamaica Plain.

Ilenberger, Henry, Brookline.
Ireland, Robert D., Winthrop.

James, Robert Kent, Newton Centre.
Jameson, G. W., East Lexington.
Johnston, Robert, Lexington.

Keith, Mrs. Mary R., Washington, D. C.
Kelsey, Harlan P., Boston.
Kemp, William S., Brookline.
Kennard, Frederic H., Brookline.
Kimball, Richard D., Waban.
Knott, N. W. T., Waban.

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Laurie, Robert, Newport, R. I.
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Lomax, George H., Somerville.
Loring, Mrs. Thacher, Boston.
Loring, William C., Beverly.
Lothrop, Thornton K., Boston.
Low, Hon. Aaron, Hingham.
Lumsden, David, Roslindale.

McLaren, Anthony, Westwood.
Manda, W. A., South Orange, N. J.
Manning, A. Chandler, Reading.
Manning, Richard C., Salem.
Martin, William J., Milton.
Meriam, Horatio C., D. M. D., Salem.
Metcalf, Dr. Ben H., Winthrop.
Milman, William, Roxbury.
Moody, Abner J., Lexington.
Morgan, George M., Boston.
Morrison, William, Cohasset.
Moseley, Frederick C., Dorchester.
Moseley, Frederick Strong, Newburyport.
Munson, Prof. W. M., Orono, Me.

Newton, John F., Roxbury.
Nicholson, William, Framingham.
Nixon, Arthur, Taunton.
Norton, Michael H., Boston.
Norton, Patrick, Dorchester.

Oakes, F. L., Newton.

Park, William D., Boston.
Parker, John, Newtonville.
Parker, Walter S., Reading.
Pettigrew, John A., Jamaica Plain.
Pierce, Mrs. F. A., Brookline.
Pray, James Sturgis, Cambridge.
Pritchard, John, Brighton.
Purdie, George A., Ormond, Florida.

Rea, Charles H., Norwood.
Rea, Frederic J., Norwood.
Rich, Miss Ruth G., Dorchester.
Rich, William E. C., Roxbury.
Richards, Mrs. P. D., West Medford.
Robb, Peter B., Whitinsville.
Robinson, Walter A., Arlington.
Rodman, Miss Mary, Concord.
Ross, Charles W., Newtonville.
Ross, Henry Wilson, Newtonville.
Ross, Walter D., Worcester.

Sander, Charles, Brookline.
Saunders, Miss Mary T., Salem.
Scott, Augustus E., Lexington.
Scudder, Samuel H., Cambridge.
Searles, E. F., Methuen.
Seaver, Edwin P., Waban.
Sharples, Stephen P., Cambridge.
Shaw, Hon. Edward P., Newburyport.
Shea, James B., Jamaica Plain.
Stevens, Mrs. Mary L., Brookline.
Stone, Joshua C., Watertown.
Strange, David T., Stoneham.
Sullivan, Michael, Revere.
Sutherland, George A., Roslindale.
Swan, Charles W., M. D., Brookline.

Tailby, Joseph, Wellesley.
Teele, William H., West Acton.
Tobey, Rufus T., Roxbury.
Tyler, Mrs. John F., North Andover.
Tyndale, Theodore H., Weymouth.

Vaughan, J. C., Chicago, Ill.

Ware, Horace E., Milton.
Warren, Samuel H., Weston.
Waugh, Prof. F. A., Amherst.
Welch, Patrick, Dorchester.
Westwood, Thomas H., Jamaica Plain.
Wheeler, Ezra H., Dorchester.
Wheeler, Henry A., Newtonville.
Wheelwright, George William, Jamaica Plain.
Whiton, Hon. Starkes, Hingham Centre.
Wilder, Miss Grace S., Dorchester.
Wilder, Miss Jemima R., Dorchester.
Wilkie, Edward A., Newtonville.
Winter, William C., Mansfield.
Wood, Mrs. Anna D., West Newton.
Wood, Elijah A., West Newton.
Wood, E. W., West Newton.
Woodford, Joseph H., Boston.
Woods, Henry F., Boston.

Young, E. Bentley, Boston.

Zirngiebel, Denys, Needham.

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OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1903.

PART II.

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American Agriculturist, vol. 1 (1842) to vol. 53 (1894).*
" Entomologist, St. Louis, Mo., 1868 to 1870, 1880.
" Farmer, Baltimore, vol. 1 (1819), vol. 2, and many odd numbers to 1877.
American Forestry Congress, Proceedings, 1885.
" Garden, Brooklyn, N. Y., 1874 to 1891.*
" Plants, a Synopsis of the Genera of, G'rg'town, D.C., 1814.
" Pomological Society, Reports, 1854 to 1887.*
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Buffalo Horticultural Society, Reports, 1845, 1851.
Burr, Fearing Jr., The Field and Garden Vegetables of America, Boston, 1863.
Country Gentleman, 1853 (vol. 1) to 1901.*
Cultivator, Albany, N.Y., many odd numbers from 1838 to 1859.
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Flora Azorica, Mauritius Seubert, 15 plates, 1844.
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Hovey's Magazine of Horticulture, 1835 (vol. 1) to 1868.
Illinois, Indiana, and Iowa, Hortic. and Agric. Societies; many annual reports.
M'Nab, William, a treatise on Cape Heaths, Edinburg, 1832.
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" Horticultural Society, Transactions, 1865 to 1903.
" Society for Promotion of Agric., Reports, 1856-1859.*
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Michigan, Minnesota, and Missouri, Agric. and Hortic. Reports.
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Tilton's Journal of Horticulture, Boston, 1867 to 1871.*
Troy, N. Y., Catalogue of Plants, etc., By John Wright and James Hall, 1836.
United States Agric. Society, Washington, Journal of the, Odd numbers 1852 to 1860.
United States Dept. of Agriculture, Reports, 1843 to 1901.*
" " " " " Monthly Reports, 1864-71, Bound.
Wisconsin State Hortic. Society, Transactions, 1869 to 1890.*

* Some numbers or volumes wanting.

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